



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

THE AUTOMOBILE TRADE DIRECTORY

AUTOMOBILE
MOTOR TRUCK
TRACTOR

*A Condensed Catalog
of the
Automotive Industries*

AIRCRAFT
MOTORCYCLE
MOTOR BOAT

PUBLISHED
QUARTERLY

APRIL, 1921

243 W. 3RD ST.
NEW YORK



Strydom
BEARINGS
FORMERLY U.S. BALL BEARINGS

FOR FULL INFORMATION SEE INSERT
Pages 105 to 106 Inclusive



THE AUTOMOBILE TRADE DIRECTORY

AUTOMOBILE
MOTOR TRUCK
TRACTOR

*A Condensed Catalog
of the
Automotive Industries*

AIRCRAFT
MOTORCYCLE
MOTOR BOAT

PUBLISHED
QUARTERLY

APRIL, 1921

243 W. 3RD ST.
NEW YORK



The advertisement features a large, stylized graphic of a bearing with a circular center and a textured outer ring. Below the bearing is a silhouette of an industrial cityscape with several tall chimneys. The text 'Strom BEARINGS' is prominently displayed in a bold, serif font, with 'Strom' in a larger, more ornate script. Below this, 'FORMERLY U.S. BALL BEARINGS' is written in a smaller, sans-serif font. At the bottom, a rectangular box contains the text 'FOR FULL INFORMATION SEE INSERT' and 'Pages 185 to 188 Inclusive'.

Strom
BEARINGS
FORMERLY U.S. BALL BEARINGS
FOR FULL INFORMATION SEE INSERT
Pages 185 to 188 Inclusive

S **TANDARD**
TRADE MARK

STEEL TUBING

Manufacturers of High-Grade
Lap Welded Mechanical Steel
Tubes and Tubular Products for

Automobile Drive
Shaft Housings
Torque Tubes
Radius Rods
Axle Tubes
Exhaust Pipes
and other Special Parts

Write us for estimates

**STANDARD
STEEL TUBE CO.
TOLEDO, OHIO**

When the Banker Asks for Your Factory Cost Sheets

EXCESSIVE repair costs may give a false impression of machine condition and so raise embarrassing credit questions.

Analyze these repair costs and note how short-lived bearings contribute to excessive maintenance costs.

Then look into the operation records of those who insist on Non-Gran bearings in their machine tools. This quality bearing bronze gives greatly increased unit life because its closely knit molecular structure makes it denser, tougher and, therefore, more resistant to frictional wear. Non-Gran is alloyed from new metals—not remelted scrap—is free from flaws, sand holes, air or gas pockets—the sole product of bearing bronze specialists for over 11 years.

Write for list of prominent automotive and machine tool builders and industrial concerns who have found that using Non-Gran now, lessens the worries of the day ahead. Copies of the Non-Gran booklets for the asking. Address:

**AMERICAN BRONZE CORPORATION
BERWYN
PENNSYLVANIA**

District Offices:

318 Tremont Bldg. 461 Peoples' Gas Bldg. 310 Leader-News Bldg.
Boston, Mass. Chicago, Ill. Cleveland, Ohio

American Distributors:

Northwest Distribution Depot—

F. E. Satterlee Company
Cutler & Wood Supply Co.
Peter A. Frasse Co., Inc.
Samuel Harris & Co.
C. S. Merdick & Co.
Sidney B. Roby Company
Root, Neal & Company
Strong, Carlisle & Hammond Co.
Boyer-Campbell Company
Oliver H. Van Horn Co., Inc.
W. J. Holliday & Co.
The Wirblich-Mann Co.
Colcord-Wright Mch'y & Supply Co.
The M. I. Wilcox Company
Powell, Clouds & Company

Minneapolis, Minn.
Boston, Mass.
New York City
Chicago, Ill.
New Haven, Conn.
Rochester, N. Y.
Buffalo, N. Y.
Cleveland, O.
Pittsburgh, Pa.
Detroit, Mich.
New Orleans, La.
Indianapolis, Ind.
Cincinnati, O.
St. Louis, Mo.
Toledo, O.
Philadelphia, Pa.

Kemp Machinery Company
Ludlow & Squier
The Charles C. Lewis Co.
Shadbolt and Boyd Iron Co.

Baltimore, Md.
Newark, N. J.
Springfield, Mass.
Milwaukee, Wis.

Foreign Distributors:

Foreign Dept. Automotive Products Corporation
Stanley J. Watson, Sheen Rd., Richmond, London, Eng.
Aktiebolaget Galco Stockholm, Sweden
Cycle Motor Trade Supply Co. Capetown and Durban
Henderson & Co. Johannesburg, South Africa
John O'Neill Pty., Ltd. Sydney, Australia
Suers de L. Villamil & Co. Porto Rico
Simonsen & Neilson Copenhagen, Denmark
Havana Auto Company Havana, Cuba
Advance Motor Company Bombay, India



3 - Autograph

S **TANDARD**
TRADE MARK

STEEL TUBING

Manufacturers of High-Grade
Lap Welded Mechanical Steel
Tubes and Tubular Products for

Automobile Drive
Shaft Housings
Torque Tubes
Radius Rods
Axle Tubes
Exhaust Pipes
and other Special Parts

Write us for estimates

**STANDARD
STEEL TUBE CO.
TOLEDO, OHIO**

When the Banker Asks for Your Factory Cost Sheets

EXCESSIVE repair costs may give a false impression of machine condition and so raise embarrassing credit questions. Analyze these repair costs and note how short-lived bearings contribute to excessive maintenance costs.

Then look into the operation records of those who insist on Non-Gran bearings in their machine tools. This quality bearing bronze gives greatly increased unit life because its closely knit molecular structure makes it denser, tougher and, therefore, more resistant to frictional wear. Non-Gran is alloyed from new metals—not remelted scrap—is free from flaws, sand holes, air or gas pockets—the sole product of bearing bronze specialists for over 11 years.

Write for list of prominent automotive and machine tool builders and industrial concerns who have found that using Non-Gran now, lessens the worries of the day ahead. Copies of the Non-Gran booklets for the asking. Address:

AMERICAN BRONZE CORPORATION
BERWYN
PENNSYLVANIA

District Offices:

348 Tremont Bldg.
Boston, Mass.

161 Peoples' Gas Bldg.
Chicago, Ill.

310 Leader-News Bldg.
Cleveland, Ohio

American Distributors:

Northwest Distribution Depot—
F. E. Satterlee Company

Cutter & Wood Supply Co.
Peter A. Frasse Co., Inc.

Samuel Harris & Co.
C. S. Mersick & Co.

Sidney B. Roby Company
Root, Neal & Company

Strong, Carlisle & Hammond Co.
Pittsburgh Gage & Supply Company

Boys-Campbell Company
Oliver H. Van Horn Co., Inc.

W. J. Holliday & Co.
The Wirthlin-Mann Co.

Colcord-Wright Mch'y & Supply Co.
The M. I. Wilcox Company

Powell, Clouds & Company

Minneapolis, Minn.
Boston, Mass.

New York City
Chicago, Ill.

New Haven, Conn.
Rochester, N. Y.

Buffalo, N. Y.
Cleveland, O.

Pittsburgh, Pa.
Detroit, Mich.

New Orleans, La.
Indianapolis, Ind.

Cincinnati, O.
St. Louis, Mo.

Toledo, O.
Philadelphia, Pa.

Kemp Machinery Company
Ludlow & Squier
The Charles C. Lewis Co.

Shadbolt and Boyd Iron Co.

Baltimore, Md.
Newark, N. J.
Springfield, Mass.

Milwaukee, Wis.

Foreign Distributors:

Foreign Dept. Automotive Products Corporation
New York, N. Y.

Stanley J. Watson, Sheen Rd., Richmond, London, Eng.
Aktiebolaget Galco Stockholm, Sweden

Cycle Motor Trade Supply Co. Capetown and Durban
Henderson & Co. Johannesburg, South Africa

John O'Neill Pty., Ltd. Sydney, Australia
Suers, de L. Villamil & Co. Porto Rico

Simonsen & Neilson Copenhagen, Denmark
Havana Auto Company Havana, Cuba

Advance Motor Company Bombay, India



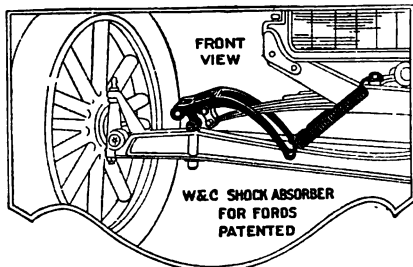
Automobile
3-TOL

Walter Eckhouse & Co.

Factory Distributors of Automotive Equipment

"W & C"

The Original Double-Arm Shock Absorber for Ford Cars



Absolutely Guaranteed

BRONZE BUSHINGS and OILERS IF ANY PART EVER BREAKS, TO BE REPLACED FREE OF CHARGE UPON RETURN OF THE BROKEN PART TO THE FACTORY.

"W & C" Construction
4 SHOCK ABSORBERS TO A SET

Double Arms—Malleable Castings—Milled Surfaces—Hard Oilers—Drilled Holes—Cold Rolled Steel Bolts—Bronze Bushings—Special Alloy Steel Springs—High Class Enameling

350,000 SATISFIED USERS

— ORDER FROM YOUR JOBBER —

Manufactured by the P. H. Webber Co., Hoopeston, Ill.

BEMILLER Complete Pistons

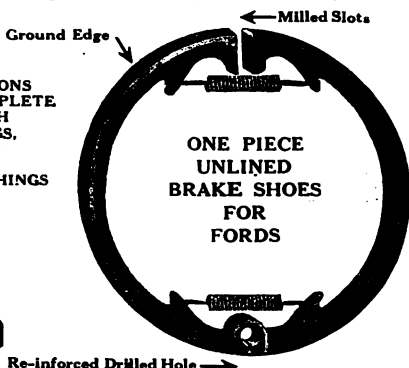
New Light Weight and Standard Weight for Fords

**PISTON PIN
BUSHINGS FOR FORDS**



PISTONS COMPLETE WITH RINGS, PINS AND BUSHINGS

*Piston Rings for Fords
Step Cut and Diagonal Cut*



Manufactured by Bemiller Fdry. & Mch. Co., Bellville, Ohio

FACTORY DISTRIBUTORS

Walter Eckhouse & Company

Chicago

616-22 So. Michigan Blvd.

Illinois

The Automobile Trade Directory

Trade Mark Reg. U. S. Pat. Off.

ESTABLISHED 1903

A Condensed Catalogue and Classified Trade Directory of the American Automotive Industries, Including a Directory of National Trade Associations, Tables, Data and other pertinent information.

Subscription price, \$10.00 per year
Single copies, \$5.00 prepaid

VOLUME XIX

No. 2

April, 1921

Published Quarterly by

The Automobile Trade Directory, Inc.
243-249 West 39th Street, New York

ROBERT WOLFERS,
President

Jos. S. CORTELYOU,
Secretary

SIDNEY J. STERN,
Advertising Manager

JOHN DIXON,
Treasurer

C. SKLAREK,
Mgr. Western Office

BRANCH OFFICES

CHICAGO: 910 S. Michigan Ave.

DETROIT: 317 West Fort St.

CLEVELAND: 340 Leader News Bldg.

PHILADELPHIA: Otis Bldg., 16th and Sansom Sts.

Copyright, 1907, 1908 by The Class Journal Company
Copyright,

1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921,
by The Automobile Trade Directory, Inc.

15151A

How to Find What you Want —*immediately*

DETERMINE the correct section
from the opposite page.

In Section 1 you will find the subject
matter grouped as follows:—
Automobiles, Commercial Ve-
hicles, Tractors, Motorcycles,
Motor Boats and Aircraft.

In Section 2 you will find the names of
products arranged in their regular
alphabetical order under the
noun.

The numerous cross references
throughout the book remove any
doubt as to the correct noun.

In Section 3 you will find everything
covered by a complete index on
Pages 1079 and 1080.

Contents

Section I, Pages 15 to 72

Automobiles, commercial vehicles, tractors, motorcycles, motor boats and aircraft.

Brief specifications of stock models. Names and addresses of manufacturers.

Section II, Pages 73 to 1076

Accessories, parts, materials and supplies for automobiles, commercial vehicles, tractors, motorcycles, motor boats and aircraft. Specialties for Ford cars; also machinery, tools, shop equipment and supplies for factories, garages and repair shops.

All products in this section are listed alphabetically under the noun. For example: "Pressed Steel Frames" are listed under "Frames," "Roller Bearings" under "Bearings," etc.

Section III, Pages 1077 to 1170

Reference tables data, formulae, reports on tests, and S. A. E. Standards. Directory of National Trade Associations.

A complete index to this section will be found on pages 1079 and 1080

Index to advertisers, pages 4 to 12

Index to Advertisers

Digitized by Google

Page	Page
Baker & Co. 611	Burgess Mfg. Co., Walter S. 873
Baker Gun & Forging Co. 605	Burgess-Norton Mfg. Co. 627
Baswin Chain & Mfg. Co. 237	Burton-Rogers Co. 81 and 1067
Baltimore Hub Wheel & Mfg. Co. 749	Bush Mfg. Co. 787
Bard Mfg. Co. 709	Bussmann Mfg. Co. 423
Barkelew Metal Products Co. 667	Byron Engineering Works. 989
Barley Motor Car Co. 19	
Barnes Foundry Co. 219	
Barnes & Irving. 699	
Bassick Co. 323	
Bassick Mfg. Co. 363	
Battery Equipment & Supply Co. 201	
Baush Machine Tool Co. 607	
Bay City Foundry & Machine Co. 1063	
Bayne Mfg. Co. 669	
Beacon Bronze Co. 563	
Beardsley & Haft Co. 393	
Bearings Co. of America. 133	
Bearings Co. of Penna. 407	
Beck & Corbitt. 637	
Becker Bros. 169	
Beckley-Ralston Co. 273	
Beedee Distributing Service. 1003	
Belden Mfg. Co. 295	
Bell Motor Car Co. 19	
Bellvue Mfg. Co. 311	
Bemco Mfg. Co. 97	
Bemiller Foundry & Machine Co.	
	Opposite Title Page
Beneke & Kropf Mfg. Co. 193	
Benford Auto Products, Inc. 945	
Benjamin Electric Mfg. Co. 181 and 529	
Bennett Injector Co. 473	
Benoit, Constant A. 227	
Benzer Corp. 317	
Berger & Co. 555	
Bersted Mfg. Co. 515	
Bessemer Motor Truck Co. 47	
Bettcher Stamping & Mfg. Co. 895	
Bilflex Products Co. 175	
Bilg & Battery Co. 916	
Bijur Motor Appliance Co. 453	
Bilton Machine Tool Co. 625	
Bimel Spoke & Auto Wheel Co. 1055	
Bingham Perfected Spark Plugs. 723	
Birkenstein & Sons, S. 647	
Bishop Gutta-Percha Co. 315	
Blackmore, Charles C. 677	
Blake Co., Alfred O. 273	
Blake Signal & Mfg. Co. 413	
Blake & Johnson Co. 833	
Blekre Tire & Rubber Co. 977	
Blckman, S. 761	
Blockson & Co. 479	
Blood-Bros. Machine Co. 551	
Bount Co., J. G. 475	
Blueblaze Motor Specialties Corp. 949	
Boe Mfg. Co. 573	
Booth Felt Co. 401 and 1041	
Borg & Beck. 267	
Bossert Corp. 887	
Boston Auto Gage Co. 425	
Boston Insulated Wire & Cable Co. 317	
Bound Brook Oil-less Bearing Co. 309	
Bowen Products Corp. 321	
Bower Roller Bearing Co. 155	
Boyle Mfg. Co. 189	
Bradford Fabrics Co. 257	
Bradley Co., H. E. 391	
Bradney Machine Co. 317	
Brander Rubber & Tire Co. 963	
Brandywine Fibre Products Co. 405	
Brawley, T. R. 401 and 1041	
Brennan Co., John. 947	
Brewer Titchener Corp. 573	
Bridgeport Brass Co. 757	
Bridgeport Coach Lace Co. 185	
Brightman Nut & Mfg. Co. 689	
Brown-Lipe-Chapin Co. 455	
Brown-Lipe Gear Co. 455	
Brown Mfg. Co., John W. 557	
Brown & Catlin. 301	
Brunner Mfg. Co. 286 and 301	
Buckeye Rubber Products Co. 1005	
Buckwalter Co., John S. 377	
Bula Co. 387	
Buell Mfg. Co. 527	
Buffalo Automobile Spring Co. 881	
Buffalo Bronze Die Cast Corp. 207	
Buffalo Specialty Co. 227	
Buffalo Weaving & Belting Co. 1049	
Buffum Tool Co. 395	
Bulders Mfg. Co. 141	
Bunting Brass & Bronze Co. 179	
Job & Scheu. 983	
	C
	C. G. Spring Co. 881
	C. & C. Sales Corp. 97
	Campbell Auto Works. 749
	Campbell, Wyant & Cannon Foundry Co. 217
	Candler Radiator Co. 633
	Canton Drop Forging & Mfg. Co. 271
	Carballoy Products Co. 399
	Car Fastener Co. 721
	Carroll Engineering Co. 273
	Case Hardening Service Co. 665 and 829
	Casey-Hudson Co. 683
	Cashman Tool Co. 1045
	Cataract Auto Washer Co. 1059
	Cathcart Co., C. A. 611
	Central Machine Works. 335
	Central Service Corp. 777
	Chadwick & Trefethen. 873
	Champion Auto Spring Co. 311
	Champion Brass Works. 725
	Champion Ignition Co. 429
	Champion Machine & Forging Co. 427
	Champion Mfg. Co. (Chicago, Ill.) 1025
	Champion Mfg. Co. (Philadelphia, Pa.) 727
	Champion Spark Plug Co. 865
	Channon-Hughson Co.
	Charcoal Iron Co. of America.
	Opposite Last Page
	Charter Oak Machine Co. 331
	Chauncy Body Corp. 127
	Chicago Auto Trade Association. 56
	Chicago Cabinet Lock Co. 591
	Chicago Fuse Mfg. Co. 427
	Chicago Malleable Castings Co. 211
	Chicago Pneumatic Tool Co. 369
	Chicago Screw Co. 551 and 827
	Chicago Solder Co. 413
	Chicago Standard Parts Co. 903
	Chicago Tribune. 153
	Chicago Wheel & Rim Co. 794 and 795
	Cinch Fastener Corp. 289
	Cincinnati Ball Crank Co. 531
	Cincinnati Rubber Mfg. Co. 945
	Cincinnati Screw Co. 633
	Cincinnati Specialty Mfg. Co. 165
	City Editor Publishing Co. 713
	Clark-Turner Piston Co. 389
	Claudel Carburetor Co. 346
	Claypool Machine Works. 1003
	Clayton & Lambert Mfg. Co. 97
	Cleveland Akron Bag Co. 29
	Cleveland Automobile Co. 427
	Cleveland Drop Forge Co. 391
	Cleveland Graphite-Bronze Co. 365
	Cleveland Twist Drill Co. 1027
	Cleveland Varnish Co.
	Cleveland Welding & Mfg. Co. of The. 791
	Hydraulic Steel Co. 825
	Cleveland Wrought Products Co. 705
	Climax Motor Devices. 409 and 999
	Climax Rubber Co. 763
	Clover Mfg. Co. 289
	Clucker & Hixson Co. 53
	Clydesdale Motor Truck Co. 709
	Cochran Piston Corp. 1075
	Code Mfg. Co. 845 and 1059
	Coe-Stapley Mfg. Corp. 59
	Cole Motor Car Co. 101
	Cole Storage Battery Co. 51
	Collier Motor Truck Co. 153
	Collier's. 677
	Colton Demountable Rim Corp. 89
	Columbia Axle Co. 29
	Columbia Motors Co. 147
	Columbus Auto Brass Co. 417
	Columbus Bolt Works Co. 361
	Columbus Forge & Iron Co. 31
	Columbus Varnish Co. 51
	Comet Automobile Co. 141
	Commerce Motor Car Co. 175
	Commercial Auto Body Co. 977
	Commercial Credit Co. 325
	Common Sense Mfg. Co. 461
	Commonwealth Brass Corp.
	Consolidated Packing & Supply Co. 79
	Continental Auto Parts Co.

THE AUTOMOBILE TRADE DIRECTORY

7

	Page
G & O Mfg. Co.	775
G. L. W. Spring Oiler Co.	726
Gahn Co. A. H.	983
Gahn-McCormick Co.	249
Ganschow Co., Wm.	137
Gardner Auto Products Co.	197
Gary Motor Truck Co.	63
Geler Co., P. A.	561
Gemco Mfg. Co.	172 and 173
General Aluminum & Brass Mfg.	203
General Asbestos & Rubber Co.	Back Cover
General Asphalte Co.	265
General Brothers Foundry Co.	219
General Drop Forge Co.	417
General Electric Co.	779
General Motors Truck Co.	55
General Phono Mfg. Co.	189
General Speedometer Co.	871
General Top Co.	985
General Utility Co.	935
Geuder, Paeschke & Frey Co.	327
Giant Grip Mfg. Co.	917
Gibson Co. Wm. D.	939
Gilbert & Barker Mfg. Co.	197
Gilbert & Sons Brass Foundry Co., A.	799 and 800
Gilm. Co.	851
Gilman-Cavis Co.	117
Gilme Co., L. H.	853
Gilmore-Winans Co.	1039
Globe Machine & Stamping Co.	411
Go-ite Mfg. Co.	987
Goodrich-Lenhart Mfg. Co.	963
Goodyear Tire & Rubber Co.	189
Gordon Mfg. Co., L. O.	227
Graham Roller Bearing Corp.	695
Gray Motor Co.	387
Gray Tooth Co.	415
Great Lakes Forge Co.	715
Greb Co.	855
Green Lock Co.	747
Greenfield Tap & Die Corp.	915
Gregory, Mayer & Thom Co.	365
Gresham Mfg. Co.	323
Grundy Mfg. Corp.	807
Guarantee Liquid Measure Co.	1005
Guaranteed Battery Co.	123
Guaranteed Magneto Parts Co.	169
Guaranty Motors Co.	433
Gurney Ball Bearing Co.	161
Gwilliam Co.	175

Page		Page
775	Hoerner Mfg. Co.	1007
326	Hollands Mfg. Co.	344
983	Hollister, L. T.	359
249	Holmes Radiator Corp.	775
137	Holmes & Co., E. J.	377
137	Holstein Mfg. Co.	767
53	Holton Hood Clip Co.	403
561	Home Insurance Co.	377
173	Hoover Steel Ball Co.	95
203	Hopewell Bros.	641
over	Horat & Co.	1036
265	Horsey Products Co.	1037
219	Horton Corp.	601
417	Hotchkiss Metal Form Co.	335
779	Houdaille Co.	825
55	Houpt Machine Co.	653
189	Howell Co., W. H.	765
871	Howes Automatic Headlight Co.	337
985	Hoyt Metal Co.	291
285	Hubbard Spring Mfg. Co.	598
935	Hughson-Bacon Co.	871
327	Humason Mfg. Co.	493
917	Hummell Mfg. Co.	115
939	Hunt Co., Henry C.	33
1807	Hupp Motor Car Corp.	157
197	Hyatt Roller Bearing Co.	
851	Hydraulic Pressed Steel Co. of The	421

I

I. C. Mfg. Co.	692
Ideal Bronze Co.	205
Ideal Clamp Mfg. Co.	243
Ignition Co. of America	727
Imperial Bearing Co.	229
Imperial Bit & Snap Co.	325
Imperial Brass Mfg. Co.	177
Improved Gauge Mfg. Co.	429
Improved Ignition, Inc.	953
Indiana Lamp Co.	68
Indiana Tractor Rng. Co.	625
Indiana Trust Corp.	53
Indianapolis Tool Mfg. Co.	477
Industrial Rubber Goods Co.	471
Ingram Motor Co.	809
Inland Pump Mfg. Co.	757
International Incandescent Lamp Works	305
International Stamping Co.	56
Interstate Iron & Steel Co.	905
Iron City Products Co.	547
Iron City Spring Co.	899

J

J. & B. Mfg. Co.	949
Jackson Motor Shaft Co.	183
Jacobs Co. F. L.	811
Jacobs Mfg. Co.	181
Jaffe Radiator Co.	241
Jambor Mfg. Co.	775
Janney-Steinmetz & Co.	893
Jeavons Spring Lubricator	937
Jefferson Forge Products Co.	981
Jenkins Vulcan Spring Co.	523
Jensen Kohliert Mfg. Co.	523
Johnson Automobile Lock Co.	761
Johnson Bronze Co.	696
Johnson Rim & Parts Co.	181
Johnson Tool Co.	793
Johnston Mfg. Co., William R.	1011
Jonas, C. N. & F. W.	653
Jordan Motor Car Co.	343 to 346B
Jordan Tire & Rubber Co.	25
Jorgensen Mfg. Co.	928
Judd & Leland Mfg. Co.	743
	751

I

H. & D. Co.	359
Hadden Messinger Corp.	1031
Hagy Electric Works, J. Milton	821
Hale Lamp Co. & Engineering Co.	301
Hall Syndicate, C. M.	157
Hall-Thompson, Inc.	485
Halstead Co., L. P.	905
Hamilton Specialties Co.	229
Hamilton Products Co.	171
Handley-Knight Co.	597
Hansen Mfg. Co.	1033
Hansen & Olson Co.	33
Hardy Mfg. Co.	1025
Harley Co.	837
Harris Accessory Co.	397
Harris Oil Co., A. W.	205 and 415
Hart, Lawrence Co.	673
Hartford, Edward V.	488
Hartford Machine Screw Co.	847
Hartman & Inman	829
Harvey Spring	843
Haskins Co., R. G. & Forging Co.	929
Hassall, John.	933
Hawleys Mfg. Co.	617
Haynes Truck Co.	573
Heald Machine Co.	47
Heath Mfg. Co.	471
Hedden Place Machine Co.	363
Hell Co.	977
Hercules Mfg. Co.	139
Hershey Mfg. Co.	599
Hesse Mfg. Co.	643
Hide Leather	1008
Hill Pump & Belting Co.	119
Hill-Smith Metal Goods Co.	687
Hillman Mfg. Co.	538
Hinkley Motors Corp.	1035
	389

K-D Lamp Co.	
K. & S. Auto Heater & Lock Co.	487
Kahn Mfg. Co.	487
Kalamazoo Splan Co.	613
Kalbfeisch Corp.	729
Kant-Mis Spark Plug Co.	379
Kant-Skore Piston Co.	489
Kastens, Henry	613
Keller Pneumatic Tool Co.	253
Kellogg Mfg. Co.	339
Kellom & Co. Chas. F.	763
Kelly Piston Ring Co.	613
	808

	Page		Page
Kelsey Wheel Co.	1061	Malay Rubber Co.	865
Kelso Manufacturing Co.	581	Malco Tire & Rubber Co.	1005
Kennedy Car Liner & Bag Co.	305	Malleable Iron Fittings Co.	247
Kent Co., F. C.	553	Manley Mfg. Co.	317
Kenyon Co., C.	503	Mansfield, J. F.	749
Kerite Insulated Wire & Cable Co.	1067	Manufacturers Foundry Co.	275
Keys Piston Ring Co.	623	Maremont Mfg. Co.	901
Keystone Reamer & Tool Co.	925	Marion Malleable Iron Works	221
Keystone Tire & Rubber Co.	959	Marquette Mfg. Co.	517
Kickhafer Mfg. Co.	891	Martin, Jas.	637
Killark Electric Mfg. Co.	423	Martin Rocking Fifth Wheel Co.	1055
Kittle Mfg. Co.	519	Marvel Carburetor Co.	193 and 197
Klaxon Co. (Newark, N. J.)	525	Marvel Machinery Co.	623 and 717
Klaxon (Detroit, Mich.)	943	Marvel Shock Absorber Corp.	859
Knight Engineering & Sales Co.	504	Masland Duralather Co.	567
Krauter & Co.	1001	Masland & Sons., C. H.	199
Kramer & Co., H.	647	Massachusetts Machine Shop	1051
L		Master Carburetor Co.	193
Ladish Drop Forge Co.	537	Master Primer Co.	745
LaFrance Truck Corp., Ward.	47	Master Service Co.	163
Ladlaw Co.	255 and 309	Mat Co.	639 and 640
Lake-Erb Mfg. Co.	981	Mather Spring Co.	875
Lake Sales Co.	807	Matthews Engineering Co.	387
Lakeside Forge Co.	1067	Maurer Co., O.	997
Lambert Mfg. Co.	497	Maxwell Motor Sales Co.	33
Laminated Shim Co.	848 and 849	May Automatic Products Co.	719
Lancaster Sales Co.	821	Mechanical Production Co.	348A
Landers Bros. Co.	1049	Meisel Press Mfg. Co.	455
Landis Tool Co.	469	Merchant Corp., M. H.	721
LaPierre & Co., H. M. (Dudle)	995	Merrill Co., Wm. C.	339
Larrabee-Deyo Motor Truck Co.	49	Merz & Son, G.	159
Las-Stick Patch Manufacturing Co.	703	Metal Hose & Tubing Co.	531
Laurel Motors Corp.	339	Metal Specialties Mfg. Co.	555
Lavine Gear Co.	443	Metalware Corp.	573
Lawrence Mfg. Co., F. K.	1075	Metz Sales Corp.	35
Lawson Co., F. H.	125	Meyer Thread Works, John C.	947
Leard Co., William	311	Michigan Bearings Co.	157
Lee Trailer & Body Co.	989	Michigan Engine Valve Co.	1015
Lehman Mfg. Co.	143	Michigan Lubricator Co.	263
Le Rol Co.	385	Michigan Motor Garment Co.	259
Leslie's Weekly	357	Michigan State Auto School	153
Levene Motor Co.	475	Michigan Steel Tube Products Co.	1027
Lewis Co., I. R.	553	Midland Fabrics Co.	271
Lewis-Hall Motors Corp.	21	Midwest Engine Co.	14
Lexington Motor Co.	33	Millinburg Body Co.	141
Liberty Works	555	Mikesell Brothers Company	315
Lincoln Brass Works	263	Miles Piston Ring Co.	613
Linden & Co.	827	Miller Brothers	187
Link-Belt Co.	237	Miller Mfg. Co., Harry A.	201
Lockwood Products Co.	1007	Miller Tool & Mfg. Co.	981
Loeb Co., Ben S.	325	Millwood-Bracket Co.	169
Long Island Soap Co.	861	Milwaukee Auto Engine & Supply Co.	953
Long Mfg. Co.	767	Milwaukee Circulating Pump Co.	845
Lonnev & Carmichael	1035	Milwaukee Die Casting Co.	211
Loomis-Beardsley Co.	975	Milwaukee Forge & Machine Co.	433
Losee Motor Products Co.	489	Mirror Park-Lite Corp.	655
Lough Bros.	207	Mitchell Automotive Co.	1051
Ludlow Manufacturing Associates.	1049	Mitchell Motors Co.	97
Luedinghaus Quality Motor Trucks	41	Mitchell & Smith	119
Lumen Bearing Co.	231	Modern Die & Tool Co.	100
Lutz Co.	293	Modern Steel Casting Co.	293
Lycoming Motors Corp.	385	Modern Tool, Die Machine Co.	357
Lyons Felt Co.	465	Modine Mfg. Co.	690
Lyons & Co., A. H.	115	Moeller, A. E.	535
M		Mogul Metal Co.	109
McAdams Sales Co., J. C.	557	Mohegan Tube Co.	1027
McCarthy Bros. & Wilson.	613	Moltrup Steel Products Co.	909
McCulloch Mfg. Co.	471	Monarch Carriage Goods Co.	399
McKane-Lins Co.	997	Monroe Automotive Equipment Mfg. Co.	1021
McKinnon Dash Co.	403	Moore Wright Co.	187
M. & H. Novelty Co.	991	Morgan Mfg. Co.	755
M. & M. Co.	35	Morris & Co., E. K.	1029
M. & M. Mfg. Co.	977	Morrison & Sons, Frank.	937
Macbeth-Evans Glass Co.	353	Morse, Frank W.	79
Madison Machine Tool Co.	483	Morse Chain Co.	235
Madison Mfg. Co.	123	Morton Mfg. Co.	1009
Madison Tire & Rubber Co.	961	Mossberg Co., Frank	1069
		Moto-Meter Co.	651
		Motor Belt & Mfg. Co.	121
		Motor Car Service Bureau	355
		Motor Electrical Equipment Co.	683
		Motor Products Corp.	843

	Page
Motor Spindle Corp.	655
Motor Starter & Air Pump Co.	515
Motor Wheel Corp. 883 and	884
Motorcraft Engineering Co.	791
Motorists' Accessories Co.	569
Motorkool Oil Co.	1001
Mound Tool Co.	1011
Multibestos Co.	615
Muncie Foundry & Machine Co.	761
Muncie Gear Works	459
Mundt & Son, L.	301
Munn Co., John O.	355
Murphy Co., G. W. J.	439
Muskegon Motor Specialties Co.	185
Mutty Co., L. J.	1005
Muzzy-Lyon Co.	109
Mystic Motor Co.	763

N

N. J. Lamp Works	633
Nagel Electric Co., W. G.	425
Nairn Linoleum Co.	555
Napoleon Motors Co.	41
Nash Shock Absorber Co.	341
Nathan Novelty Mfg. Co.	313
National Acme Co.	667
National Auto Supply Co.	337
National Automotive Mfg. Co.	611
National Can Co.	769
National Carbon Co.	167
National Cash Register Co.	783
National Fibre & Insulation Co.	409
National Gauge & Equipment Co.	429
National Lead Co.	211
National Metal Molding Co.	299
National Spring Co.	1029
National Umbrella Frame Co.	1045
Naugatuck Tire & Rubber Co.	971
Necedah Mfg. Co.	933
Nelson Mfg. Co., A.	83
Never Break Products Co.	311
Never-fail Carburetor Co.	199
New Departure Mfg. Co.	111
New England Mills Co.	143
New Haven Carriage Co.	129
New York Wire & Spring Co.	847
Niagara Motors Corp.	693
Niehoff & Co., Paul G.	893
No-Leak-O Piston Ring Co.	807
Noble Heater Co.	346B
Norma Co. of America.	74
North East Electric Co.	525
North East Service, Inc.	525
Northwestern Chemical Co.	277
Northwind Spark Plug Corp.	739

O

O. K. Giant Battery Corp.	239
O'Bannon Corp.	255
Oakes Co.	397
Obenchain-Boyer Co.	135
Oettinger Corp., F. W.	427
Ogren Motor Car Co.	31
Ohio Forge Co.	1009
Ohio Grease Co.	271
Ohio Guaranty Tire & Rubber Co.	961
Ohio Seamless Tube Co.	1009
Ohio Steel Foundry Co.	223
Oldberg Mfg. Co.	663
Onan, David W.	539
Overbrook Carpet Co.	199

P

P. S. M. Co.	1047
Packard Engineering Co.	853
Paddock Cork Co.	301
Pan-American Motors Corp.	31
Pannier Bros. Stamp Co.	897

Parenti Motors Corp.	55
Parish Mfg. Co.	419
Park Chemical Co.	273
Park Drop Forge Co.	319
Park Mfg. Co.	701
Parts Service Co.	147
Peaslee-Gaulbert Co.	693
Pellet Magneto Co.	901
Penberthy Injector Co.	561
Pennsylvania Gear & Machine Co.	483
Pennsylvania Piston Ring Co.	609
Perfect Window Regulator Co.	787
Perfection Co.	1065
Perfection Garage Equipment Co.	763
Perfection Hydrometer Co.	563
Perfection Piston Ring Co.	809
Perfex Radiator Co.	775
Perkins Campbell Co.	115
Perma-Loc Mfg. Co.	705
Perpetual Air Bag Co.	307
Perry Auto Lock Co.	595
Peru Auto Parts Mfg. Co.	87
Peters, Inc.	269
Peterson Mfg. Co., A. H.	343
Pharis Tire & Rubber Co.	961
Pharo Mfg. Co.	459
Philadelphia Storage Battery Co.	167
Philbrin Corp.	1027
Phoenix Carriage Co.	313
Phoenix Mfg. Co.	147
Pick Co., Carl	497
Pierce Governor Co.	467
Pines Mfg. Co.	635
Pirsch & Sons Co., Peter	129
Piston Ring Co.	631
Pollak Steel Co.	415
Polygon Products Co.	279
Pomerooy Electric Co.	609
Porter, H. K.	251
Porter Inc.	344
Porter Products Corp.	569
Positive Lock Washer Co.	1045
Poulson & Co., Charles W.	199
Powell Muffler Co.	665
Powell Pressed Steel Co.	393
Power-Oil Co.	671
Powers Mfg. Co.	581
Pratt & Whitney Co.	373
Precision Castings Co.	219
Prescott Auto Parts Co.	807
Pressed Steel Co.	889
Pressure Proof Piston Ring Co.	657
Production Foundries Co.	241
Protex Signal Co.	513
Protexall Co.	259
Pruden Hardware Co., W. E.	335
Puritan Machine Co.	699

Q

Quality Electric Products Co.	539
Quincy and Schroeder, Inc.	991
Quinn Co., Nelson J.	741

R

R. & H. Platinum Works	721
Racine Accessories Mfg. Co.	701
Radium Luminous Material Corp.	337
Rain-Sun Vision Shield Co.	345
Rajo Motor Co.	487
Rauch & Lang	27
Ray Battery Co.	99
Raybestos Co.	577
Red Line, Inc.	667
Red Seal Rubber & Cement Co.	231
Reflex Ignition Co.	725
Regar Brass Mfg. Co.	177
Reighard Oil Co., H. E.	979
Reinhard Brothers Co.	279
Reliance Mfg. Co.	1045

Digitized by Google

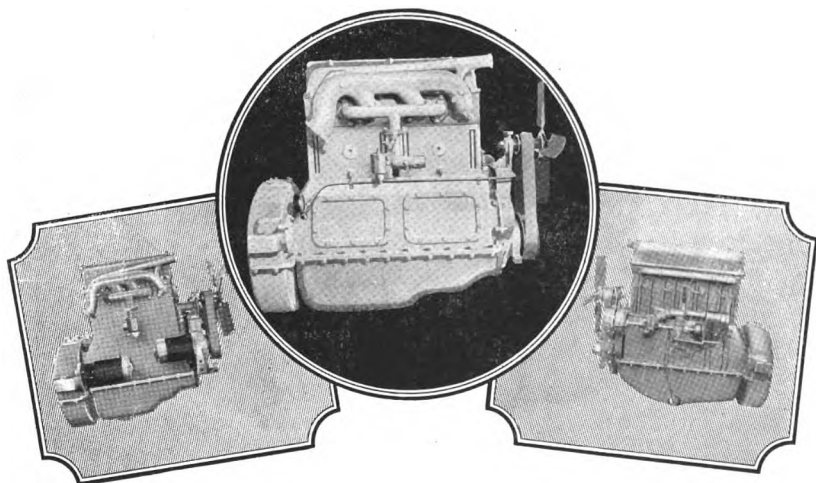
	Page	Y	Page
Wolverine Tube Co.	871	Yale & Towne Mfg. Co.	599
Wood & Spencer Co.	627	Yellow Cab Mfg. Co.	23
Wood Hydraulic Hoist & Body Co.	137	York Corrugating Co.	931
Woodward & Cochey.	123	Yost Mfg. Co.	1032
Woodworkers Tool Works	821		
Worcester Abrasive Co.			
.....281 and 282 and Book Mark			
Worcester Pressed Steel Co.	901		
Worcester Stamped Metal Co.	1051	Zapon Leather Cloth Co.	299
Wright Cover Mfg. Co.	307	Zenite Metal Co.	901
Wyeth Hardware & Mfg. Co.	497	Zenith Carburetor Co.	195
Wyman-Gordon	Back Bone	Zinke Co.	685 to 692

SECTION 1

Automobiles, Commercial Vehicles,
Tractors, Motorcycles, Motor Boats
and Aircraft.

BRIEF specifications of stock models. Names and addresses of manufacturers.





Model 408-3 $\frac{1}{2}$ x 5"

Model 400-4 $\frac{1}{2}$ x 6"

Model 402-4 $\frac{1}{8}$ x 5 $\frac{1}{4}$ "

Forget Bore and Stroke and Buy Engines That Sell on Performance

Study This Record of Midwest Engine Performance

Model 408 4 Cyl. 3 $\frac{1}{2}$ x 5"			Model 400 4 Cyl. 4 $\frac{1}{2}$ x 6"			Model 402 4 Cyl. 4 $\frac{1}{8}$ x 5 $\frac{1}{4}$ "		
R.P.M.	H.P.	Torque	R.P.M.	H.P.	Torque	R.P.M.	H.P.	Torque
500	11	116 lbs. ft.	400	17.5	233 lbs. ft.	400	13	171 lbs. ft.
600	13.5	118 lbs. ft.	600	28.5	249 lbs. ft.	600	20.5	179 lbs. ft.
800	19	125 lbs. ft.	800	37.5	246 lbs. ft.	800	27.5	181 lbs. ft.
1000	25	130 lbs. ft.	1000	46	243 lbs. ft.	1000	34	179 lbs. ft.
1200	29	127.5 lbs. ft.	1200	53	234 lbs. ft.	1200	40	175 lbs. ft.
1400	33	124 lbs. ft.	1400	59	222 lbs. ft.	1400	45	169 lbs. ft.
1600	36	118 lbs. ft.	1500	61	213 lbs. ft.	-----	-----	-----
1800	39	114 lbs. ft.	1600	-----	-----	1600	47.5	156 lbs. ft.
			1800	-----	-----	-----	-----	-----

In addition to unusual performance at low speed, all Midwest Engines are guaranteed for full load and constant service up to 1500 ft. piston speed per minute. This is possible due to the lubricating system (which is patented and can be secured in no other engine) and the extreme size of the crankshaft—preventing bearings from "going out of round". High compression—big valves and valve lifts with high intake velocities and correct scavenging result in more power and torque on less fuel than any other engine we know of.

MIDWEST ENGINE COMPANY : : Indianapolis, U.S.A.

MIDWEST

TRUCK and TRACTOR ENGINE

SECTION I

Automobiles, Commercial Vehicles, Tractors, Motorcycles, Motor Boats and Aircraft

Gasoline Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheel- base	Size of Tires
Ace	Apex Motor Corp., Ypsilanti, Mich.	6-3½x5	Own	25.3	116	32x4
	Touring.....					
	Roadster.....					
	Sedan.....					
	Coupe.....					
Allen 43	Roadster.....	4-3½x5	Own	19.6	110	32x4
	Touring.....					
	Allen Motor Co., Columbus, Ohio					
	Chassis.....					
	Roadster.....					
Ambassador See page 23	Roadster Special.....	6-3½x5	Herschell-Spill	25.3	127	32x4
	Touring Special.....					
	Touring.....					
	Roadster Artcraft.....					
	Touring Artcraft.....					
American C 6-60 See page 19	Four-Door Sedan.....	6-3½x5	Own	33.8	130	31x4½
	Yellow Cab Mfg. Co., Chicago, Ill.					
	American & British Mfg. Corp.—See Porter.					
	American Motors Corp., Plainfield, N. J.					
	Five-Passenger Touring.....					
Anderson 30 A-B-C-D-E-F-G	Four-Passenger Sport.....	6-3½x4½	Continental	25.3	120	33x4
	Seven-Passenger Touring.....					
	Two-Passenger Roadster.....					
	Coupe.....					
	Sedan.....					
Apperson 8-20 See Page 19	Anderson Motor Co., Rock Hill, S. C.	8-3½x5	Own	39.6	142	34x4½
	Seven-Passenger Touring.....					
	Four-Passenger Coupe.....					
	Five-Passenger Touring.....					
	Convertible Roadster.....					
Auburn Beauty Six 6-39	Five-Passenger Sedan.....	6-3½x4½	Continental	25.3	120	32x4
	Two-Passenger Speedster.....					
	Four-Passenger Sport.....					
	Apperson Bros. Automobile Co., Kokomo, Ind.					
	Seven-Passenger Standard.....					
Austin	Four-Passenger Standard.....	12-2½x5	Weidely	39.6	142	34x4½
	Seven-Passenger Standard Sedan.....					
	Four-Passenger Standard Sedanette.....					
	Seven-Passenger Anniversary.....					
	Four-Passenger Anniversary.....					
Auburn Beauty Six 6-39	Apex Motor Corp.—See Ace.	6-3½x4½	Continental	25.3	120	32x4
	Auburn Automobile Co., Auburn, Ind.					
	Five-Passenger Touring.....					
	Two-Passenger Touring.....					
	Five-Passenger Roadster.....					
Austin	Five-Passenger Sedan.....	12-2½x5	Weidely	39.6	142	34x4½
	Four-Passenger Coupe.....					
	Austin Automobile Co., 114-18 Division Ave., S. E., Grand Rapids, Mich.					
	Touring.....					
	Roadster.....					
Auburn Beauty Six 6-39	Sedan.....					
	Limousine.....					

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
	Barley Motor Car Co.—See Roamer.					
Beggs 21T.R.	Beggs Motor Car Co., Michigan & Guinotte Ave., Kansas City, Mo. Five-Passenger Touring.....\$1885 Four-Passenger Roadster.....1685	6-3½x4½	Continental	25.3	120	33x4
Bell 18 See page 19	Bell Motor Car Co., York, Pa. Five-Passenger Touring.....\$1495	4-3½x5	Herschell-Spill	19.6	114	31x4
Biddle 1-5	Biddle Motor Car Co., 142nd St. & Fifth Ave., New York, N. Y. Two-Passenger Ormand.....\$3750 Two-Passenger Roadster King.....3750 Four-Passenger Touring Rosemont.....3750 Four-Passenger Roadster Brewster.....3750 Six-Passenger Touring.....3750 Seven-Passenger Sedan.....4600	4-3½x5½	Buda	22.5	121	32x4
					125	32x4
Birch 30	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1205 Two-Passenger Roadster.....1295	4-3½x4½	Le Roi	15.6	108	30x3½
Birch 55	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1895 Seven-Passenger Touring.....2695 Four-Passenger Sport.....1945 Three-Passenger Roadster.....1895	6-3½x5	Herschell-Spill	25.3	117	33x4
Birch 45	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1595 Three-Passenger Roadster.....1595 Four-Passenger Sport.....1645 Seven-Passenger Sedan.....2395	4-3½x5	Herschell-Spill	19.6	117	33x4
Bour-Davis 21, F.S.R.	Louisiana Motor Car Co., Shreveport, La. Seven-Passenger Touring.....\$2585 Five-Passenger Touring.....2585 Two-Passenger Roadster.....2585	6-3½x5½	Continental	29.4	125	33x4½
Brewster Knight 01	Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y. Runabout.....\$7900 Limousine.....10600 Brougham.....10500 Landulet.....10700 Enclosed Drive.....10500	4-4 x5½	Own	25.6	125	34x4½
Briscoe 34	Briscoe Motor Corp., Jackson, Mich. Roadster.....\$1285 Touring.....1285 Sedan.....1885	4-3½x5	Own	18.2	109	31x4
Brook	Spacke Machine & Tool Co., Indianapolis, Ind. Two Passenger Runabout.....\$395	2-3½x3½	Own	9.8	90	28x3
Buick 44-45-46-47	Buick Motor Co., Hamilton Ave., Flint, Mich. Three-Passenger Roadster.....\$1795 Five-Passenger Touring.....1795 Four-Passenger Coupe.....2585 Five-Passenger Sedan.....2985 Seven-Passenger Touring.....2065 Seven-Passenger Sedan.....3285 Four-Passenger Coupe.....2985	6-3½x4½	Own	27.3	118	33x4
					124	34x4½
Cadillac 59	Cadillac Motor Car Co., 1343 Cass Ave., Detroit, Mich. Roadster.....\$3790 Phaeton.....3790 Victoria.....4540 Sedan.....4950 Coupe..... Town Brougham.....5290 Limousine.....5290 Seven-Passenger Touring.....3940 Imperial Limousine.....5390 Suburban.....5190	8-3½x5½	Own	31.2	125	34x4½
					132	35x5

Please mention The Automobile Trade Directory

"Specifications"

Model	Capacity	Price	Motor	Size	Lubri- cation	Cool- ing	Radiator	Car- buretor	Ignition	Electric Start and Lighting	Clutch	Trans- mission	Univer- sal Joints
Winther, 751	1 ton.	\$1795	Her-Sp.	3 1/2 x 5	Force	T-S.	Tubular	Stromberg	Willard	West.	Warner	Warner	Peters
Winther, 39	1 1/2 ton.	2450	Wis.	3 3/4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters
Winther, 70	2 ton.	3250	Wis.	4 x 5	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 109	3 1/2 ton.	4200	Wis.	4 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 140	5 ton.	5200	Wis.	4 1/2 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 430 (four-wheel-drive)	7 ton.	5900	Wis.	5 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 450 (four-wheel-drive)	1 1/2 ton.	2850	Wis.	3 1/2 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters
Winther, 450 (four-wheel-drive)	2 1/2 ton.	3690	Wis.	4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters

Model	Rear Axle	Frame	Springs	Steer- ing	Wheels	Tires	Wheel- base	Turning Radius	Weight	Body Allowance	Tread	Rec. Speed
Winther, 751	Torb., 6.6-1.	5" channel.	Detroit.	Lavine	Wood	34x4 1/2	135"	21'	2700 lbs.	800 lbs.	56"	30 m.p.h.
Winther, 39	Medway, 7-1.	6" channel.	Detroit.	Lavine	Metal 34x3 1/2	34x5	140"	28'	3700 lbs.	1000 lbs.	56"	18 m.p.h.
Winther, 49	Clark, 8-1.	7" channel.	Mather.	Ross.	Metal 34x4	34x4 1/2	147"	29'	5700 lbs.	1200 lbs.	56"	17 m.p.h.
Winther, 70	Clark, 9-1.	7" channel.	Mather.	Ross.	Metal 36x5	36x5 1/2	150"	31 1/2'	6400 lbs.	1600 lbs.	67" 70"	16 m.p.h.
Winther, 109	Clark, 11-1.	9" channel.	Mather.	Ross.	Metal 36x6	40x6 1/2	162"	33'	8600 lbs.	2000 lbs.	69" 65"	12 m.p.h.
Winther, 140	Clark, 11-1.	9" channel.	Mather.	Ross.	Metal 36x6	40x7 1/2	162"	33'	9500 lbs.	2500 lbs.	69" 65"	10 m.p.h.
Winther, 430 (four-wheel-drive)	Medway, 7-1.	6" channel.	Detroit.	Lavine	Metal 32x4	32x4	132"	30'	4125 lbs.	1000 lbs.	56"	17 m.p.h.
Winther, 450 (four-wheel-drive)	Clark, 9-1.	6" channel.	Mather.	Lavine	Metal 34x4	36x6	150"	32'	4300 lbs.	1350 lbs.	56"	15 m.p.h.

Regular equipment includes side and tail light, seat, tools, jack and painting in dark Brewster Green with light green running gear. We can promptly supply cabs, bodies, hoists, winches, electrical equipment, pneumatic tires, etc., at a moderate additional charge.

WINTHER MOTOR TRUCK COMPANY
Manufacturers of Motor Trucks and Motor Cars
 KENOSHA, WISCONSIN

WINTHER MOTOR TRUCKS

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
	Barley Motor Car Co.—See Roamer.					
Beggs 21 T.R.	Beggs Motor Car Co., Michigan & Guinotte Ave., Kansas City, Mo. Five-Passenger Touring.....\$1885 Four-Passenger Roadster.....1685	6-3½x4½	Continental	25.3	120	33x4
Bell 18 See page 19	Bell Motor Car Co., York, Pa. Five-Passenger Touring.....\$1495	4-3½x5	Herschell-Spill	19.6	114	31x4
Biddle 1-5	Biddle Motor Car Co., 142nd St. & Fifth Ave., New York, N. Y. Two-Passenger Ormand.....\$3750 Two-Passenger Roadster King.....3750 Four-Passenger Touring Rosemont.....3750 Four-Passenger Roadster Brewster.....3750 Six-Passenger Touring.....3750 Seven-Passenger Sedan.....4600	4-3½x5½	Buda	22.5	121	32x4
					125	32x4
Birch 30	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1295 Two-Passenger Roadster.....1295	4-3½x4½	Le Roi	15.6	108	30x3½
Birch 55	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1895 Seven-Passenger Touring.....2695 Four-Passenger Sport.....1945 Three-Passenger Roadster.....1895	6-3½x5	Herschell-Spill	25.3	117	33x4
Birch 45	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Five-Passenger Touring.....\$1595 Three-Passenger Roadster.....1595 Four-Passenger Sport.....1645 Seven-Passenger Sedan.....2395	4-3½x5	Herschell-Spill	19.6	117	33x4
Bour-Davis 21, F.S.R.	Louisiana Motor Car Co., Shreveport, La. Seven-Passenger Touring.....\$2585 Five-Passenger Touring.....2585 Two-Passenger Roadster.....2585	6-3½x5½	Continental	29.4	125	33x4½
Brewster Knight 91	Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y. Runabout.....\$ 7000 Limousine.....10800 Brougham.....10500 Landaulet.....10700 Enclosed Drive.....10500	4-4 x5½	Own	25.6	125	34x4½
Briscoe 34	Briscoe Motor Corp., Jackson, Mich. Roadster.....\$1285 Touring.....1285 Sedan.....1885	4-3½x5	Own	18.2	109	31x4
Brook	Spacke Machine & Tool Co., Indianapolis, Ind. Two Passenger Runabout.....\$395	2-3½x3½	Own	9.8	90	28x3
Buick 44-45-46-47	Buick Motor Co., Hamilton Ave., Flint, Mich. Three-Passenger Roadster.....\$1795 Five-Passenger Touring.....1795 Four-Passenger Coupe.....2535 Five-Passenger Sedan.....2985 Seven-Passenger Touring.....2065 Seven-Passenger Sedan.....3295 Four-Passenger Coupe.....2985	6-3½x4½	Own	27.3	118	33x4
					124	34x4½
Cadillac 59	Cadillac Motor Car Co., 1343 Cass Ave., Detroit, Mich. Roadster.....\$3790 Phaeton.....3790 Victoria.....4540 Sedan.....4950 Coupe.....5200 Town Brougham.....5200 Limousine.....3940 Seven-Passenger Touring.....5390 Imperial Limousine.....5390 Suburban.....5190	8-3½x5½	Own	31.2	125	34x4½
					132	35x5

Please mention The Automobile Trade Directory

"Specifications"

Model	Capacity	Price	Motor	Size	Lubrication	Cooling	Radiator	Carburetor	Ignition	Electric Start and Lighting	Clutch	Transmission	Univer. Joints
Winther, 751.....	1 ton.	\$1795.....	Her-Sp.	3 1/2 x 5	Force	T.S.	Tubular	Stromberg	Willard	West.	Warner.	Warner.	Peters
Winther, 39.....	1 1/4 ton.	2450.....	Wis.	3 3/4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller.	Fuller.	Peters
Winther, 49.....	2 ton.	3250.....	Wis.	4 x 5	Force	Pump	Tubular	Master.	Eisemann	No.	Borg & Beck.	B-Lipe.	Blood
Winther, 109.....	3 1/4 ton.	4200.....	Wis.	4 x 6	Force	Pump	Tubular	Master.	Eisemann	No.	Borg & Beck.	B-Lipe.	Blood
Winther, 140.....	5 ton.	5250.....	Wis.	4 1/2 x 6	Force	Pump	Tubular	Master.	Eisemann	No.	Borg & Beck.	B-Lipe.	Blood
Winther, 430 (four-wheel-drive).....	7 ton.	5900.....	Wis.	5 x 6	Force	Pump	Tubular	Master.	Eisemann	No.	Borg & Beck.	B-Lipe.	Blood
Winther, 450 (four-wheel-drive).....	1 1/2 ton.	2850.....	Wis.	3 3/4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller.	Fuller.	Peters
	2 1/4 ton.	3690.....	Wis.	4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller.	Fuller.	Peters

Model	Rear Axle	Frame	Springs	Steering	Wheels	Tires	Wheel-base	Turning Radius	Weight	Body Allowance	Tread	Rec. Speed
Winther, 751.....	Torb., 66-1.....	5" channel	Detroit.	Lavine	Wood	34x4 1/2	135"	21'	2700 lbs.	800 lbs.	56"	30 m.p.h.
Winther, 39.....	Medway, 7-1.....	6" channel	Detroit.	Lavine	Metal	34x3 1/2	140"	28'	3700 lbs.	1000 lbs.	56"	18 m.p.h.
Winther, 49.....	Clark, 8-1.....	7" channel	Mather.	Ross.	Metal	34x4	147"	29'	5700 lbs.	1200 lbs.	56"	17 m.p.h.
Winther, 70.....	Clark, 9-1.....	7" channel	Mather.	Ross.	Metal	36x5d.	150"	31 1/2'	6400 lbs.	1600 lbs.	67" 70"	16 m.p.h.
Winther, 109.....	Clark, 11-1.....	9" channel	Mather.	Ross.	Metal	36x6	162"	33'	8600 lbs.	2000 lbs.	69" 65"	12 m.p.h.
Winther, 140.....	Clark, 11-1.....	9" channel	Mather.	Ross.	Metal	36x6	162"	33'	9500 lbs.	2500 lbs.	69" 65"	10 m.p.h.
Winther, 430 (four-wheel-drive).....	Medway, 7-1.....	6" channel	Detroit.	Lavine	Metal	32x4	132"	30'	4125 lbs.	1000 lbs.	56"	17 m.p.h.
Winther, 450 (four-wheel-drive).....	Clark, 9-1.....	6" channel	Mather.	Lavine	Metal	34x4	150"	32'	4300 lbs.	1350 lbs.	56"	15 m.p.h.

Regular equipment includes side and tail light, seat, tools, jack and painting in dark Brewster Green with light green running gear. We can promptly supply cabs, bodies, hoists, winches, electrical equipment, pneumatic tires, etc., at a moderate additional charge.

WINTER MOTOR TRUCK COMPANY
Manufacturers of Motor Trucks and Motor Cars
 KENOSHA, WISCONSIN

WINTER MOTOR TRUCKS

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Case	Case, T. M. Co., J. I., State & Douglas Sts., Racine, Wis. Seven-Passenger Touring.....\$2650 Four-Passenger Sport.....2650 Four-Passenger Coupe.....3400 Seven-Passenger Sedan.....3750	6-3½x5¼	Continental	29.4	126	34x4½
Chalmers 35 C, 35 B See page 33	Maxwell Motor Sales Corp., Detroit, Mich. Five-Passenger.....\$1795 Roadster.....1795 Four-Passenger Coupe.....2595 Sedan.....2745 Seven-Passenger Touring.....1945	6-3½x4½	Own	25.4	117	32x4
Champion Special 1920	Champion Motors Corp., Harrison Bldg., Phila- delphia, Pa. Touring.....\$1595	4-3½x6	Herschell-Spill	19.6	118	32x4
Champion	Champion Motors Corp., Harrison Bldg., Phila- delphia, Pa. Five-Passenger Tourist.....\$1250	4-3½x6	Lycorning	19.6	113	32x3½
Chandler 1920 New Series	Chandler Motor Car Co., Cleveland, Ohio Touring.....\$1930 Two-Passenger Roadster.....1930 Chummy Roadster.....1930 Dispatch.....2010 Coupe.....2930 Seven-Passenger Sedan.....3030 Seven-Passenger Limousine.....3530	6-3½x5	Own	29.4	123	33x4
Chevrolet 490	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y. Roadster.....\$ 785 Touring.....820 Coupe.....1325 Sedan.....1375	4-3½x4	Own	21.7	102	30x3½
Chevrolet FB	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y. Roadster.....\$1320 Touring.....1345 Sedan.....2075 Coupe.....2075	4-3½x5¼	Own	21.7	110	33x4
Cleveland 40 See page 29	Cleveland Automobile Co., Cleveland, Ohio Five-Passenger Touring.....\$1465 Three-Passenger Roadster.....1465 Five-Passenger Sedan.....2475 Four-Passenger Coupe.....2375	6-3x4½	Own	21.6	112	32x4
Climber K	Climber Motor Corp., Little Rock, Ark. Touring.....\$1650 Roadster.....1650	4-3½x5	Herschell-Spill	19.6	117	33x4
Climber S	Climber Motor Corp., Little Rock, Ark. Touring.....\$2750 Roadster.....2750	6-3½x5	Herschell-Spill	25.4	125½	32x4½
Cole Aero-Eight See page 23	Cole Motor Car Co., Indianapolis, Ind. Touring..... Roadster..... Sportster..... Sportsedan..... Sportosine..... Sportcoupe..... Toursine..... Toursedan.....	8-3½x4½	Northway	39.2	127	33x5
Colonial	Colonial Motors Corp., 1108 Boylston St., Boston, Mass. Six-Passenger Touring.....\$2750 Four-Passenger Sport.....2750 Two-Passenger Roadster.....2750 Six-Passenger Sedan.....3850 Four-Passenger Sedanette.....3850	6-3½x5¼	Beaver	29.4	130	33x4½

Please mention The Automobile Trade Directory

The Balanced Six **AMERICAN** Miles & Smiles

Careful selection of units, and the skill of American engineers, have built perfect balance into the Greater American.

Two great factories produce this Balanced Six.

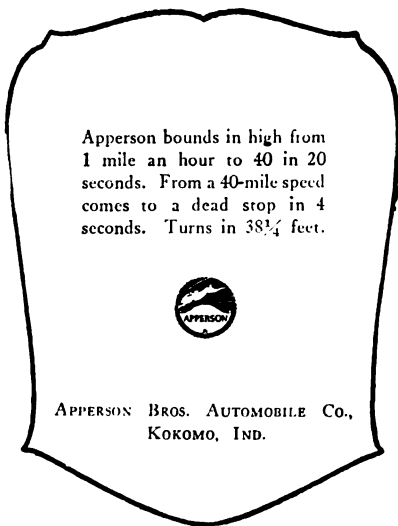
Dealers are invited to write or telegraph regarding the American franchise.

5 Passenger touring car.....	\$2,395
7 Passenger touring car.....	2,475
4 Passenger sport car.....	2,595
Roadster	2,395
Sedan	3,495



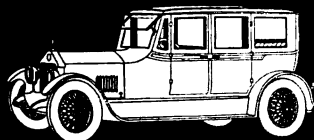
AMERICAN MOTORS CORP.
Plainfield, N. J.

AMERICAN-SOUTHERN MOTORS CORPORATION
Greensboro, N. C.



APPERSON

THE EIGHT
WITH EIGHTY LESS PARTS



The
ROAMER
America's Smartest Car

*Thirteen Models
Custom Built
to Your Order*

THE BARLEY MOTOR CAR CO.
KALAMAZOO MICHIGAN

BELL Motor Cars

DEALERS!

Write today for agency.

WE need a few more good wide-awake distributors for the "Bell Car"—it is a car that almost sells itself, owing to its high standard of construction, embodying as it does the same general principle as contained in cars selling for \$2,000 to \$3,000.

Write us today for our facts about the "Bell" and our proposition to distributors.

Bell Motor Car Co.

York, Pa.

Export Dept., 100 Broad St.

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

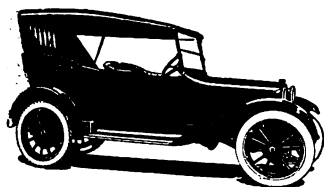
Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Columbia 6 See page 29	Columbia Motors Co., Detroit, Mich. Five-Passenger Touring \$1795 Four-Passenger Sport 1845 Two-Passenger Roadster 1845 Five-Passenger Sedan 2295 Four-Passenger Coupe 2295	6-3½x4¼	Continental	25.6	115	32x4
Comet C 53 See page 31	Comet Automobile Co., Garfield Avenue & I. C. R. R., Decatur, Ill. Five-Passenger Touring \$2350	6-3½x5¼	Continental	29.4	125	32x4½
Commonwealth 42-45	Commonwealth Motors Co., 326 W. Madison St., Chicago, Ill. Five-Passenger Touring \$1895 Five-Passenger Touring (1921) \$1595 Four-Passenger Sportster 1785 Five-Passenger Sedan 2465	4-3½x5	Herschell-Spill	19.6	117	32x4
	Cortland Cart & Carriage Co.—See Hatfield.				116	
Crawford 21-6-40	Crawford Automobile Co., Surrey & Summit Aves., Hagerstown, Md. Touring \$3000 Sport 2000 Roadster 2000 Sedan 4500	6-3½x5¼	Continental	29.4	122½	32x4
Crow-Elkhart L-66-63-64	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Roadster \$1295 Touring 1295 Four-Passenger Sport 1845	4-3½x5	Lycoming	19.6	117	32x3½
Crow-Elkhart B-63-64-65-67	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Touring \$1845 Roadster 1845 Sport 1895 Sedan 2395	6-3½x5	Herschell-Spill	25.3	117	33x4
Cunningham V37 59-79-55-57-58	Cunningham, Son & Co., James, 13 Canal St., Rochester, N. Y. Two-Passenger Roadster Four-Passenger Roadster Six-Passenger Touring Seven-Passenger Touring Six-Passenger Inside Drive Limousine Six-Passenger Town Car Six-Passenger Landulet	8-3½x5	Own	45.0	132 142	35x5
Daniels D-19	Daniels Motor Car Co., Third St. & Lebanon Valley R. R., Reading, Pa. Brougham \$6750 Landau 7250 Sedan 6800 Four Passenger C. C. Sedan 6950 Suburban 7025 Limousine 6750 Cabriolet 6500 Open Car 6250 Landulet Suburban 7600	8-3½x5¼	Own	39.2	132½	32x4½ 34x4½
Davis 51-52-53-54-55 56-57	Davis Motor Car Co., Geo. W., 1200 N. E. St., Richmond, Ind. Five-Passenger Touring \$1895 Four-Passenger Sport 1995 Four-Passenger Sport (Special) 2150 Five-Passenger Sedan 2795 Four-Passenger Coupe 2795 Two-Passenger Roadster 1995 Two-Passenger Roadster (Special) 2150	6-3½x4½	Continental	25.3	120	33x4

Please mention The Automobile Trade Directory

DODGE BROTHERS MOTOR CAR

The gasoline consumption is unusually low
The tire mileage is unusually high



The Car of the Hour



Elgin Motor Car Corporation
ARGO (Suburb of Chicago) ILLINOIS

Mark the Prosperity of Essex Dealers

The profits that reward Essex dealers in such conspicuous measure are the best proof of the desirability of an Essex franchise.

There may be an opportunity for you in one of the few Essex franchises now open.



HALL

MOTOR



TRUCKS

2½- 3½- 5-Ton Worm Drive Models
5- 7-Ton Chain Drive Models

Open Territory Available
Write for Full Particulars

Lewis-Hall Motors Corporation
Detroit, Michigan

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Dispatch G	Dispatch Motor Car Co., 1200 14th Ave., S. E., Minneapolis, Minn. Two-Passenger Roadster.....\$1290 Four-Passenger Roadster.....1350 Seven-Passenger Touring.....1350 Coupe.....1525 Sedan.....1575	4-3½x5	Wisconsin	22 5	120	34x4
Dixie-Flyer H.S. 70	Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky. Touring.....\$1595 Roadster.....1695 Sedan.....2570 Coupe.....2570	4-3½x5	Herschell-Spill	19.6	112	32x4
Dodge See page 21	Dodge Bros., 7804 Jos. Campau Avenue, Detroit Mich. Touring.....\$1285 Roadster.....1235 Sedan.....2150 Coupe.....1900	4-3½x4½	Own	24.0	114	32x3½
Dorris-6-80	Dorris Motor Car Co., 4100 Lactede Ave., St. Louis, Mo. Seven-Passenger Touring.....\$4785 Four-Passenger Tourist.....4785 Four-Passenger Coupe.....5800 Seven-Passenger Sedan.....6690	6-4x5	Own	38.4	132	33x5
Dort 17A-17AS 12A-12AC See page 29	Dort Motor Car Co., Flint, Mich. Touring.....\$1215 Roadster.....1215 Sedan.....1995 Coupe.....1865	4-3½x5	Lycoming	19.6	105½	30x3½ 31x4
DuPont	DuPont Motors, Moore, Pa. Four-Passenger Touring.....\$3400 Five-Passenger Suburban Sedan.....4900 Five-Passenger Touring Sedan.....4900 Two-Passenger Roadster.....3400	4-3½x5½	Own	24.6	124	32x4½ 32x4
Douglas G	Douglas Motor Corp., 30th & Sprague Sts., Omaha, Neb. Five-Passenger.....\$2000 Four-Passenger Speedster.....2250 Seven-Passenger.....2200	8-3½x5	Herschell-Spill	38.8	122	34x4
Elcar 4 D.H.K.G.	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind. Touring.....\$1495 Sportster.....1495 Coupe.....2095 Sedan.....2195	4-3½x5	Lycoming	19.6	116	33x4
Elcar 6 D.H.K.G.	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind. Touring.....\$1795 Sportster.....1795 Coupe.....2395 Sedan.....2495	6-3½x4½	Continental	25.3	117	33x4
Elgin New K 1 See page 21	Elgin Motor Car Corp., Argo, Ill. Touring.....\$1775 Sedan.....2685 Four-Passenger Scout.....1895 Coupe.....2685	6-3½x4½	Falls	23.4	117	33x4
Essex 'A-6-A See page 21	Essex Motors, 2901 E. Jefferson Ave., Detroit, Mich. Five-Passenger Touring.....\$1595 Two-Passenger Roadster.....1595 Five-Passenger Sedan.....2450 Two-Passenger Cabriolet.....2100	4-3½x5	Own	18.2	108½	32x4½
Ferris 6	Ohio Motor Vehicle Co., Oakview & Nottingham Rds., Cleveland, Ohio. Touring.....\$3350 Sport Touring.....3500 Four-Passenger Sedan.....4100	6-3½x5½	Continental	20.4	130	32x4½

Please mention The Automobile Trade Directory

REO

The Complete Quality Line

Reo Six Cylinder Cars

Touring, Roadster,
Sedan and Coupe

The Reo Speed Wagon

With Bodies Fitted for
Every Line of Business

*We have room for a few more
live dealers*

Reo Motor Car Co.
Lansing, Mich.

JORDAN MOTOR CARS

JORDAN CARS
contain more of
the complete standard
specifications of the
Society of Automotive
Engineers than any
other car in the world
today.

JORDAN MOTOR CAR CO.
Cleveland, Ohio



Yellow Taxicabs Yellow Cab Trucks Ambassador Passenger Cars

Manufactured by

YELLOW CAB MANUFACTURING COMPANY, Inc.
CHICAGO, ILLINOIS

THE WASHINGTON

"THE IDEAL OF A NATION"



WASHINGTON MOTOR CO.

IF you want the maximum
profit on a direct factory
contract for one of America's
best light sixes:—

Write or Wire

Eaton, Ohio

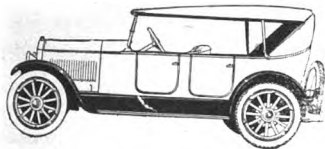
Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Ford T	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich. Touring..... Runabout..... Coupe..... Sedan.....	4-3½x4	Own	22.5	100	30x3½
Franklin 9B	Franklin Mfg. Co., H. H., 101 W. Marellus St., Syracuse, N. Y. Chassis..... Touring..... Two-Passenger Runabout..... Four-Passenger Roadster..... Brougham..... Sedan..... Demi-Sedan..... Demi-Coupe.....	6-3½x4	Own	25.3	115	32x4
Friend 4	Friend Motors Corp., Pontiac, Mich. Three-Passenger Roadster..... Five-Passenger Touring..... Three-Passenger Coupe..... Five-Passenger Sedan.....	4-3½x4½	Own	16.9	112	32x3½
Gardner G	Gardner Motor Co., Main & Rutger Sts., St. Louis, Mo. Five-Passenger Touring..... Three-Passenger Roadster..... Sedan.....	4-3½x5	Lycoming	19.6	112	32x3½
Geronimo 6-A-45	Geronimo Motor Co., Enid, Okla. Five-Passenger..... Roadster..... Chummy Roadster..... Seven-Passenger.....	6-3½x5	Rutenber	23.4	122	32x4
Grant H-X	Grant Motor Car Corp., Coit. Rd. & Kirby Ave., Cleveland, Ohio..... Five-Passenger Touring..... Two-Passenger Roadster..... Five-Passenger Sedan..... Four-Passenger Coupe.....	6-3½x4½	Own	23.4	116	32x4
H. C. S.	H. C. S. Motor Car Co., 14th & Capitol Ave., Indianapolis, Ind. Four-Passenger Touring..... Two-Passenger Roadster.....	4-3½x5½	Weidely	21.0	120	32x4½
Halladay 21-22-23-24	Halladay Motors Corp., Newark, Ohio..... Two-Passenger Touring..... Five-Passenger Touring..... Four-Passenger Coupe..... Five-Passenger Sedan.....	6-3½x5	Rutenber	23.4	116	34x4
Handley-Knight A See page 33	Handley-Knight Co., Kalamazoo, Mich. Seven-Passenger Touring..... Seven-Passenger Sedan.....	4-4½x4½	Own	27.2	125	32x4½
Hanson Six 54-60	Hanson Motor Co., Ashby & Lee Sts., Atlanta, Ga. Five-Passenger Touring..... Four-Passenger Sport..... Two-Passenger..... Sedan.....	6-3½x4½	Continental	25.3	121	32x4
Harroun AA 2	Hare's Motors.—See Locomobile & Mercer. Harroun Motors Corp., Wayne, Mich. Five-Passenger Touring.....	4-3½x5¼	Own	16.9	106	30x3½
Hatfield C-42	Cortland Cart & Carriage Co., Sidney, N. Y. Five-Passenger Touring..... Four-Passenger Roadster.....	4-3½x5	Herschell-Spill	19.6	115	32x4
Haynes 47 See page 25	Haynes Automobile Co., Kokomo, Ind. Tourister..... Touring..... Sp. Speedster..... Suburban..... Brougham..... Coupe..... Sedan.....	6-3½x5	Own	29.4	132	34x4½

Please mention The Automobile Trade Directory



The Manufacturers of Scripps-Booth Motor Cars, with the advantages of the large organization of which they are a division, General Motors Corporation, do not have in mind either quantity madness or quality neglect, but are now building and intend to continue to build a car that will command the respect of the dealers and owners in this country.

Scripps-Booth Corporation
Detroit, Mich.



America's First Car

Ninety per cent. Haynes-made, with the powerful Haynes motor as its heart, with every detail of design and construction keenly supervised by Haynes experts, the new Haynes character cars are what naturally is expected of the builders of America's first car



THE HAYNES AUTOMOBILE
COMPANY - Kokomo, Indiana
EXPORT OFFICE
1715 Broadway, New York City, U. S. A.

**Velie
Sells**



Five-Passenger



Seven-Passenger



Sedan



Speedster

On these values at the lowest 1921 prices for the quality: 7-R Continental Red Seal 6-cylinder motor—Timken axles front and rear—Timken bearings all around—Borg & Beck clutch—Bijur starting and lighting. Velie lighting. Velie last—Four mirror finish. Four models 48 and four smaller models 34—all Sixes. Also 1½-ton truck. Velie dealers have a complete line.

In these days of rapidly changing conditions it pays to be a part of a financially solid organization such as the Velie.

Write about your territory

VELIE MOTORS CORPORATION
109 VELIE PLACE - MOLINE, ILLINOIS

Overland
TRADE MARK REG.

**Triplex
Springs**

Willys
KNIGHT

*"Sleeve-Valve, The Motor
That Always Runs"*

Willys-Overland, Inc.

Toledo, Ohio

Sedans, Coupes, Touring Cars and Roadsters

Willys-Overland Limited

Toronto, Canada

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

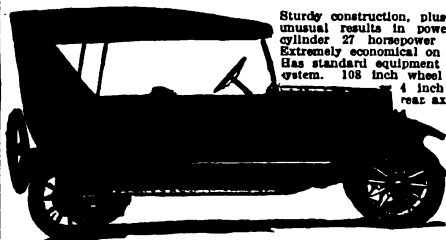
Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke & Engine	Make of Engine	N. A. C. C. H. P.	Wheel- base	Size of Tires
Haynes 48 See page 25	Haynes Automobile Co., Kokomo, Ind. Tourister.....\$3635 Brougham.....4650 Touring.....3635 Suburban.....4950 Speedster.....4200 Sedan.....4950 Coupe.....4350	12-2 $\frac{3}{4}$ x5	Own	36.3	132	34x4 $\frac{1}{2}$
Haynes 50 See page 25	Haynes Automobile Co., Kokomo, Ind. Price.....\$1985	6-3 $\frac{1}{2}$ x5	Own	29.4	121	33x4
Holmes 1	Holmes Automobile Co., Winfield Way, Canton, Ohio.....\$3350 Four-Passenger Roadster.....3350 Seven-Passenger Touring.....4250 Coupe.....4650 Six-Passenger Sedan.....4650	6-3 $\frac{1}{2}$ x4 $\frac{1}{4}$	Own	29.4	126	34x4 $\frac{1}{4}$
Hudson Super-Six 0	Hudson Motor Car Co., 12601 E. Jefferson St., Detroit, Mich.....\$2400 Seven-Passenger Phaeton.....2400 Four-Passenger Phaeton.....3000 Cabriolet.....3400 Sedan.....3275 Coupe.....3625 Touring Limousine.....4000 Limousine.....4000	6-3 $\frac{1}{2}$ x5	Own	29.4	125 $\frac{1}{2}$	34x4 $\frac{1}{2}$
Huffman W	Huffman Brothers Motor Co., Elkhart, Ind. Five-Passenger Touring.....\$1995 Two-Passenger Roadster.....1995	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	120	32x4
Hupmobile R See page 33	Hupp Motor Car Corp., Detroit, Mich. Touring.....\$1685 Roadster.....1685 Sedan.....2800 Coupe.....2725	4-3 $\frac{1}{4}$ x5 $\frac{1}{2}$	Own	16.9	112	32x4
Jackson 6-38	Jackson Motors Corp., Jackson, Mich. Touring.....\$1050 California Special.....2785 Sport.....2685 Semi-Sport.....2350 Coupe.....3760 Sedan.....3760	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	121	33x4 $\frac{1}{2}$
Jordan F See page 23	Jordan Motor Car Co., Cleveland, Ohio. Seven-Passenger Touring.....\$2875	6-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Continental	29.4	127	32x4 $\frac{1}{2}$
Jordan M	Jordan Motor Car Co., Cleveland, Ohio. Five-Passenger Touring.....\$2650 Two-Passenger Roadster.....2650 Four-Passenger Brougham.....3700 Five-Passenger Sedan.....3700	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	120	32x4
Kenworthy	Kentucky Wagon Mfg. Co.—See Dixie-Flyer. Kenworthy Motors Corp., 211 E. Mishawaka Ave., Mishawaka, Ind. Four Passenger Touring.....\$2725 Seven-Passenger Touring.....2725	6-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Own	29.4	130	32x4 $\frac{1}{2}$
King H	King Motor Car Co., 8745 Conant Rd., Detroit, Mich. Touring.....\$2725 Foursome.....2725 Limousine.....4035 Road-King.....2775	8-3 x 5	Own	28.8	120	32x4 $\frac{1}{2}$
Kissel Six	Kissel Motor Car Co., Hartford, Wis. Seven-Passenger Touring.....\$2775 Four-Passenger Tourister.....3475 Two-Passenger Speedster.....3475 Four-Passenger Coupe.....4275 Six Passenger Sedan.....4275 Urban Sedan.....4650 Coach Sedan.....4675	6-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Own	26.3	124	32x4 $\frac{1}{2}$

See mention The Automobile Trade Directory

The Light Weight, Low Priced Car

"Built for the Owner"

Seneca
MOTOR CAR



Sturdy construction, plus simplicity of parts, combines to give the Seneca unusual results in power and performance. Equipped with LeRoi four cylinder 27 horsepower motor—cast on bloc—all moving parts enclosed. Extremely economical on fuel consumption (25 miles to gallon of gasoline). Has standard equipment throughout, including electric starting and lighting system. 108 inch wheel base with 56 inch tread. Special pressed steel, 4 inch channel frame. Cantilever springs, full floating rear axle; irreversible steering gear; stream line body most comfortably cushioned; Brewster green in color with black chassis and chrome yellow wheels. Guaranteed Raynite top with slide curtains, full set of tools, pump, speedometer, robe, etc.

Price \$1185.00

Write for Dealer's Proposition

Seneca Motor Car Co.

Dept. 124 Fostoria, Ohio, U. S. A.

At Last— The Ideal Motor Car!

IN THE new Rauch & Lang Electric we have, at last, the ideal automobile. It is the car that you have dreamed and talked so much about. The result of years of advanced engineering thought and development. The most practical, reliable, serviceable and economical car for the average requirements.

RAUCH & LANG, INC.
Chicopee Falls, Mass.

MITCHELL SIXES

1921 MODELS

5-Passenger Touring Car	\$1750
3-Passenger Roadster	1750
4-Passenger Special	1950
5-Passenger Sedan	2900
4-Passenger Coupe	2800
7-Passenger Touring Car	1995

40 H. P. 120 in. Wheelbase—48 H. P. 127 in. Wheelbase

Prices F. O. B. Factory
Government Tax Extra

Mitchell Motors Company, Inc.
Racine, Wisconsin

1—1½—2½
TON CAPACITY



DEALERS
WANTED

TRUCKS OF QUALITY

URSUS MOTOR COMPANY

6601 W. GRAND AVE.

CHICAGO, U. S. A.

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

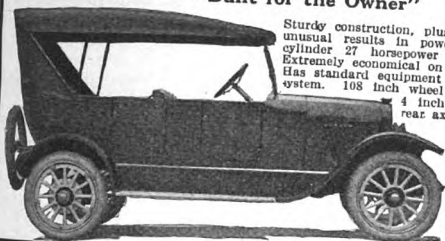
Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke & Engine	Make of Engine	N. A. C. C. H. P.	Wheel- base	Size of Tires
Haynes 48 See page 25	Haynes Automobile Co., Kokomo, Ind. Tourster.....\$3635 Brougham.....4650 Touring.....3635 Suburban.....4950 Speedster.....4200 Sedan.....4950 Coupe.....4350	12-2 $\frac{1}{2}$ x5	Own	36.3	132	34x4 $\frac{1}{2}$
Haynes 50 See page 25	Haynes Automobile Co., Kokomo, Ind. Price.....\$1985	6-3 $\frac{1}{2}$ x5	Own	29.4	121	33x4
Holmes 1	Holmes Automobile Co., Winfield Way, Canton, Ohio. Four-Passenger Roadster.....\$3350 Seven-Passenger Touring.....3350 Coupe.....4250 Six-Passenger Sedan.....4650	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Own	29.4	126	34x4 $\frac{1}{2}$
Hudson Super-Six 0	Hudson Motor Car Co., 12601 E. Jefferson St., Detroit, Mich. Seven-Passenger Phaeton.....\$2400 Four-Passenger Phaeton.....2400 Cabriolet.....3000 Sedan.....3400 Coupe.....3275 Touring Limousine.....3625 Limousine.....4000	6-3 $\frac{1}{2}$ x5	Own	29.4	125 $\frac{1}{2}$	34x4 $\frac{1}{2}$
Huffman W	Huffman Brothers Motor Co., Elkhart, Ind. Five-Passenger Touring.....\$1995 Two-Passenger Roadster.....1995	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	120	32x4
Hupmobile R See page 33	Hupp Motor Car Corp., Detroit, Mich. Touring.....\$1685 Roadster.....1685 Sedan.....2800 Coupe.....2725	4-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	Own	16.9	112	32x4
Jackson 6-38	Jackson Motors Corp., Jackson, Mich. Touring.....\$1950 California Special.....2785 Sport.....2685 Semi-Sport.....2350 Coupe.....3760 Sedan.....3760	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	121	33x4 $\frac{1}{2}$
Jordan F See page 23	Jordan Motor Car Co., Cleveland, Ohio. Seven-Passenger Touring.....\$2875	6-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental	29.4	127	32x4 $\frac{1}{2}$
Jordan M	Jordan Motor Car Co., Cleveland, Ohio. Five-Passenger Touring.....\$2650 Two-Passenger Roadster.....2650 Four-Passenger Brougham.....3700 Five-Passenger Sedan.....3700	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	Continental	25.3	120	32x4
Kenworthy	Kentucky Wagon Mfg. Co.—See Dixie-Flyer. Kenworthy Motors Corp., 211 E. Mishawaka Ave., Mishawaka, Ind. Four Passenger Touring.....\$2725 Seven-Passenger Touring.....2725	50-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	Own	29.4	130	32x4 $\frac{1}{2}$
King H	King Motor Car Co., 8745 Conant Rd., Detroit, Mich. Touring.....\$2725 Foursome.....2725 Limoudan.....4035 Road-King.....2775	8-3 x 5	Own	28.8	120	32x4 $\frac{1}{2}$
Kissel Six	Kissel Motor Car Co., Hartford, Wis. Seven-Passenger Touring.....\$2775 Four-Passenger Tourster.....3475 Two-Passenger Speedster.....3475 Four-Passenger Coupe.....4275 Six Passenger Sedan.....4275 Urban Sedan.....4650 Coach Sedan.....4575	6-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	Own	26.3	124	32x4 $\frac{1}{2}$

Please mention The Automobile Trade Directory

The Light Weight, Low Priced Car

"Built for the Owner"

Seneca
MOTOR CAR



Sturdy construction, plus simplicity of parts, combines to give the Seneca unusual results in power and performance. Equipped with Leifol four cylinder 27 horsepower motor—cast en bloc—all moving parts enclosed. Extremely economical on fuel consumption (25 miles to gallon of gasoline). Has standard equipment throughout, including electric starting and lighting system. 108 inch wheel base with 56 inch tread. Special pressed steel, 4 inch channel frame. Cantilever springs, full floating rear axle; irreversible steering gear; stream line body most comfortably cushioned; Brewster green in color with black chassis and chrome yellow wheels. Guaranteed Raynite top with side curtains, full set of tools, pump, speedometer, robe, etc.

Price \$1185.00

Write for Dealer's Proposition

Seneca Motor Car Co.

Dept. 124 Fostoria, Ohio, U. S. A.

At Last— The Ideal Motor Car!

IN THE new Rauch & Lang Electric we have, at last, the ideal automobile. It is the car that you have dreamed and talked so much about. The result of years of advanced engineering thought and development. The most practical, reliable, serviceable and economical car for the average requirements.

RAUCH & LANG, INC.
Chicopee Falls, Mass.

MITCHELL SIXES

1921 MODELS

5-Passenger Touring Car	\$1750
3-Passenger Roadster	1750
4-Passenger Special	1950
5-Passenger Sedan	2900
4-Passenger Coupe	2800
7-Passenger Touring Car	1995

40 H. P. 120 in. Wheelbase—48 H. P. 127 in. Wheelbase

Prices F. O. B. Factory
Government Tax Extra

Mitchell Motors Company, Inc.
Racine, Wisconsin

1—1½—2½
TON CAPACITY



DEALERS
WANTED

TRUCKS OF QUALITY

URSUS MOTOR COMPANY
6601 W. GRAND AVE.
CHICAGO, U. S. A.

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Kline-Kar 6	Kline Car Corp., 701-11 E. Carey St., Richmond Va. Auxiliary Touring..... \$2200 Sport..... 2285 Roadster..... 2265	6-3½x4½	Continental	28.8	131	32x4
LaFayette	LaFayette Motors Co., Mare Hill, Indianapolis, Ind. Touring..... \$5635 Torpedo..... 5625 Sedan..... 7400 Coupe..... 7200 Limousine..... 7600	8-3½x2½	Own	33.8	123	32x5
Leach 21 A. B. C.	Leach-Biltwell Co., 4800 Santa Fe Ave., Los Angeles Cal. Five-Passenger..... \$5200 Seven-Passenger..... 5700 Three-Passenger..... 5700	6-3½x2½	Continental	29.4	128	32x4½
Lexington ST See page 33	Lexington Motor Co., Connersville, Ind. Therobred..... \$2285 Lux..... Sedan..... 2785 Coupe..... 3250 Sedan..... 2985 Sedanette..... 4150 Salon Sedan..... 4250	6-3½x4½	Continental	25.3	122	32x4
			Ansted		128	32x4½
Liberty 10-C	Liberty Motor Car Co., Charlevoix Ave. & Connors Rd., Detroit, Mich. Five-Passenger Touring..... \$1795 Two-Passenger Roadster..... 1795 Four-Passenger Sport..... 1885 Five-Passenger Sedan..... 2850 Four-Passenger Coupe..... 3825	6-3½x2½	Own	23.4	117	32x4
Lincoln	Lincoln Motor Co., Warren Ave., Detroit, Mich. Touring..... \$4600 Phaeton..... 4600 Roadster..... 4600 Coupe..... 5750 Sedan..... 6000 Town Brougham..... 6250 Suburban Limousine..... 6600 Town Car..... 6600	8-3½x2½	Own	36.4	130	33x5
					136	
Locomobile 48	Hare's Motors, 18 W. 61st St., New York, N. Y. Seven-Passenger Touring..... \$7550 Four-Passenger Sport..... 7859 Limousine..... 9150 Landaulet..... 9150	6-4½x2½	Own	48.6	142	35x5
Lorraine 21 T.S.C.R.	Lorraine Motors Corp., Grand Rapids, Mich. Touring..... \$1665 Sedan..... 2590 Coupe..... 2590 Roadster..... 1665	4-3½x2½	Herreshell-Spill	19.6	114	32x4
	Louisiana Motor Car Co.—See Bour-Davis.					
McFarlan	McFarlan Motor Co., Mount & High Sts., Connersville, Ind. Touring..... Touring Sedan..... Sport Sedan..... Sport.....	6-4½x2½	Own	48.6	140	35x5
						33x5
Maibohm	Maibohm Motors Co., Sandusky, Ohio Phaeton..... \$1575 Roadster..... 1575 Sporting Roadster..... 1875 Sedan..... 2395 Coupe..... 2395 Sport Special.....	6-3½x4½	Falls	23.4	116	32x4

Please mention The Automobile Trade Directory

CLEVELAND SIX

Touring Car
Five Passengers

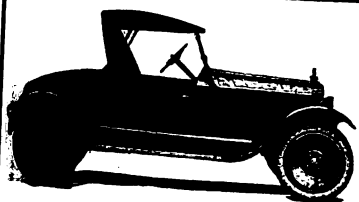
Roadster *Sedan*
Three Passengers Five Passengers

Coupe
Four Passengers

**CLEVELAND AUTOMOBILE
COMPANY**

Cleveland - - - OHIO

Export Department:
5 Columbus Circle, New York, N. Y.
Cable Address: "CLEVE-AUTO"



Columbia Six

Roadster

Gem of the Highway

SIX MODELS—A Five-Passenger Touring Car; Four-Passenger Sport Model (five wire wheels); Four-Passenger Special Sport (five Distel wheels); Two-Passenger Roadster (five Distel wheels); Four-Passenger Coupe (five wire wheels), and a Five-Passenger Touring Sedan (five wire wheels), conceived by master designers and founded on units of international reputation.

Columbia Motors Company
DETROIT
U. S. A.

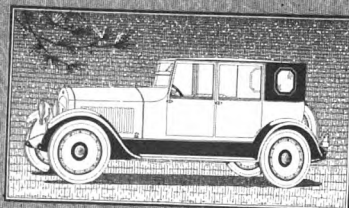
DORT

Quality Goes Clear Through

The enduring and uncommonly competent mechanical qualities of the Dort are now fittingly supplemented with bodies of delightful and distinctive beauty

(2a)

DORT MOTOR CAR COMPANY
Fifty Years



There's a Touch of Tomorrow in all Cole Does Today

Cole Aero-EIGHT

Prices on Application

Cole Motor Car Company
Creators of Advanced Motor Cars
Indianapolis, U. S. A.

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

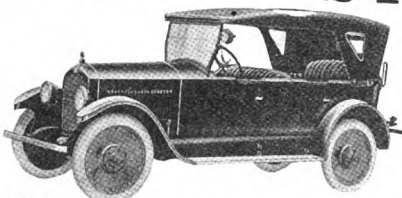
Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Marmon B 34	Nordyke & Marmon Co., Kentucky Ave. & Morris St., Indianapolis, Ind. Seven-Passenger Touring..... \$5000 Roadster..... 5000 Four-Passenger Touring..... 5000 Speedster..... 5300 Seven-Passenger Sedan..... 6800 Town Car..... 6800 Coupe..... 6150 Limousine..... 6800	6-3½x5½	Own	33.7	136	32x4½
Maxwell 25 See page 33	Martin-Wasp Corp.—See Wasp. Marwell Motor Sales Corp., Detroit, Mich.— See also Chalmers..... \$995 Four-Passenger Touring..... 995 Three-Passenger Roadster..... 995 Five-Passenger Sedan..... 1695 Three-Passenger Coupe..... 1595	4-3½x4½	Own	21.0	118	30x3½
Merce	Harc's Motors 16 W. 61st St., New York, N. Y. Four-Passenger Sport..... \$3050 Six-Passenger Touring..... 3950 Runabout..... 3950 Racabout..... 3950 Coupe..... 6180 Touring Limousine..... 5650	4-3½x6½	Own	22.5	132	33x5
Metz Master Six See page 35	Metz Sales Corp., 915-921 Boylston St., Boston Mass. (Sole Distributors for Metz Co., Waltham, Mass.)..... \$1995 Touring..... 1995 Roadster..... 2795 Coupe..... 2895 Sedan..... 2895	6-3½x5	Rutenber	21.4	120	32x4
Merit B	Merit Motor Co., 6505-09 Cedar Ave., Cleveland, Ohio..... \$2295 Four-Passenger Touring..... 2295 Two-Passenger Roadster..... 2295	6-3½x4½	Walker	25.3	119	32x4
Mitchell, F 40-42 See page 27	Mitchell Motors Co., Racine, Wis. Roadster..... \$1750 Five-Passenger Touring..... 1750 Five-Passenger Sedan..... 2900 Four-Passenger Coupe..... 2800 Four-Passenger Sport..... 1950 Seven-Passenger Touring..... 1995	6-3½x5	Own	25.3	120	33x4
Monitor	Monitor Motor Car Co., Columbus, Ohio..... \$2475 Five-Passenger Touring..... 2475 Four-Passenger Roadster..... 2475 Five-Passenger Sedan..... 3475	6-3½x4½	Continental	25.3	121	33x4
Monroe S-9	Small Co., Wm., 33-37 W 11th St., Indianapolis, Ind. Touring..... \$1440	4-3½x4½	Own	16.9	115	32x3½
Moon 6-68-20	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo. Touring..... \$2085	6-3½x5½	Continental	29.4	125	32x4½
Moon 6-48-20	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo. Touring..... \$2185 Roadster..... 2285 Coupe..... 3185 Sedan..... 3185	6-3½x4½	Continental	25.3	125	32x4
Moore	Moore Motor Vehicle Co., N. Tilton St., Danville, Ill. Five-Passenger Touring..... \$1175	4-3x5	Own	14.4	108	30x3½
Nash 681-686-687-684- 683-652	Nash Motors Co., Kenosha, Wis. Five-Passenger Touring..... \$1695 Two-Passenger Roadster..... 1695 Four-Passenger Sport..... 1850 Seven-Passenger Sedan..... 2895 Four-Passenger Coupe..... 2650 Seven-Passenger Tourist..... 1875	6-3½x5	Own	25.3	121	33x4
					127	34x4½

Please mention The Automobile Trade Directory

COMET SIX

A Car
of
Unusual
Power



Live Dealers
wire or
write your
territory
may be
open

COMET AUTOMOBILE CO. 825-69 Garfield Ave., Decatur, Ill.

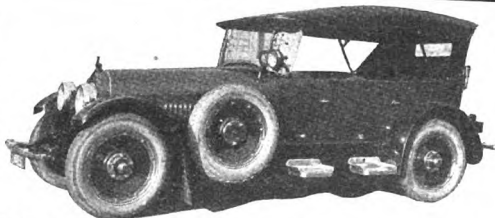
OGREN

"CUSTOM BUILT"

SIX

Touring, 5 & 7 Passenger
Sport Models, 4 Passenger
Roadsters

Write for Specifications



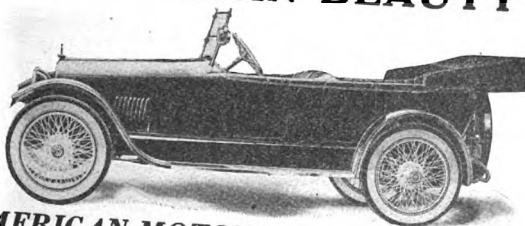
MILWAUKEE

OGREN MOTOR CAR CO.

WISCONSIN

"THE AMERICAN BEAUTY CAR"

BUILT
IN
THREE
MODELS



2 Pass.
Roadster

5 Pass.
Touring

Sedan

PAN-AMERICAN MOTORS CORPORATION, Decatur, Ill.

Wide Awake Manufacturers of Automotive Products

find it to their interest to have their catalogs and other trade literature in the working files of The Automobile Trade Directory.

It is a gigantic task to properly classify the makers of the many thousands of automotive products with the correctness for which The Automobile Trade Directory is famous.

The manufacturer who, by having us on his mailing lists, keeps us informed of developments and changes makes certain that his name appears in connection with the goods for which he seeks a market.

THE AUTOMOBILE TRADE DIRECTORY
243 West Thirty-ninth Street
NEW YORK

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
National "Bentley"	National Motor Car & Vehicle Corp., 1041 E. 22nd St., Indianapolis, Ind. Two-Passenger Roadster.....\$3750 Four-Passenger Phaeton..... 3750 Seven-Passenger Touring..... 3750 Seven-Passenger Sedan..... 4850 Four-Passenger Coupe..... 4900 Nordyke & Marmon Co.—See Marmon.	6-3½x5½	Ow	29.4	180	32x4½
Noma X C	Noma Motor Corp., 155 Ave. D, New York, N. Y. Two-Passenger.....\$3000 Four-Passenger..... 3900	6-3½x4½	Continental	25.3	128	
Norwalk 18	Norwalk Motor Car Co., Martinsburg, W. Va. ... Five-Passenger.....	4-3½x5	Lycorning	19.6	116	32x3½
Oakland 34-C	Oakland Motor Car Co., 240 Oakland Ave., Pon- tiaz, Mich. Roadster.....\$1395 Touring..... 1895 Coupe..... 2055 Sedan..... 2055	6-2½x4½	Ow	19.0	115	32x3½ 32x4
Ogren See page 31	Ogren Motor Car Co., Milwaukee, Wis. Seven Passenger Standard Touring...\$3500 Four-Passenger Standard Roadster... 3600 Four-Passenger Sport Touring..... 3750 Four-Passenger Sport Roadster..... 3850 Seven-Passenger Sport Touring..... 3900 Four-Passenger Coupe..... 5000 Four-Passenger Sport Coupe..... 5250 Five-Passenger Sedan..... 5400 Seven-Passenger Sedan..... 5550 Seven-Passenger Limousine..... 5750 Ohio Motor Vehicle Co.—See Ferris.	6-3½x5½	Ow	29.4	134	33x5
Oldsmobile 43-A	Olds Motor Works, Lansing, Mich. Touring.....\$1445 Roadster..... 1445 Sedan..... 2145 Coupe..... 2145	4-3½x5½	Ow	21.7	115	32x4
Oldsmobile 46-B	Olds Motor Works, Lansing, Mich. Touring.....\$2100 Pacemaker..... 2100 Sedan..... 3300	8-2½x4½	Ow	26.4	122	33x4½
Overland 4 See page 25	Willys-Overland, Inc., Toledo, Ohio. Five-Passenger Touring..... Two-Passenger Roadster..... Five-Passenger Sedan..... Two-Passenger Coupe (Wire Wheels).....	4-3½x4	Ow	18.2	100	30x3½ 31x4
Owen Magnetic 60	Owen Magnetic Motor Car Corp., Wilkes-Barre Pa. Touring.....\$7000 Four-Passenger..... 7000 Coupe..... 8000 Sedan..... 8500	6-4x5½	Ow	38.4	142	35x5
Packard Single-Six	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich. Runabout..... Touring..... Coupe..... Sedan.....	6-8½x4½	Ow	27.3	116	33x4½
Packard Twin-Six	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich. Touring..... Duplex Sedan..... Duplex Coupe..... Runabout..... Limousine..... Phaeton.....	12-3x5	Ow	48.2	136	35x5

Please mention The Automobile Trade Directory

Handley Knight



The Handley-Knight Company

Manufacturers of

Knight Motored Automobiles

Kalamazoo

Michigan

Hupmobile

*The
Comfort Car*



Hupp Motor Car Corporation
Detroit, Mich.

Lexington
MINUTE MAN SIX



"In Unity There Is Strength"

THE Lexington institution—with its ten affiliated factories—occupies an impregnable position. On this rests the firm, public faith in the Lexington Car.

LEXINGTON MOTOR COMPANY

Connersville, Indiana, U. S. A.

Subsidiary United States Automotive Corporation



The best gauge of what the new and powerful Maxwell organization signifies to the motor car industry is the extraordinary interest being manifested by dealers all over the country.

MAXWELL

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheel- base	Size of Tires
Paige 6-44	Paige-Detroit Motor Car Co., Fort & McKinstry Sta., Detroit, Mich. Five-Passenger Touring.....\$1795 Two-Passenger Roadster.....1795 Five-Passenger Sedan.....2720 Four-Passenger Coupe.....2600 Four-Passenger Sport.....2015	6-3½x5	Own	25.3	119	32x4
Paige 6-66	Paige-Detroit Motor Car Co., Fort & McKinstry Sta., Detroit, Mich. Four-Passenger Sport.....\$2895 Seven-Passenger Touring.....2795 Seven-Passenger Sedan.....3750 Five-Passenger Coupe.....3675	6-3½x5	Continental	33.7	131	33x4½
Pan-American 6-55 E.F.G. See page 31	Pan-American Motors Corp., Decatur, Ill. Five-Passenger Touring.....\$2250 Two-Passenger Roadster.....2250 Seven-Passenger Sedan.....3600	6-3½x5	Herchell-Spill	25.3	121	33x4
Pan A	Pan Motor Co., St. Cloud, Minn. Touring.....\$1500	4-3½x5	Own	16.9	108	33x4
Parenti 1921 See page 55	Parenti Motors Corp., Buffalo, N. Y. Five-Passenger Touring.....\$2000 Five-Passenger Sedan.....3000	8-2½x4½	Own	24.2	123	32x4
Paterson 6-50	Paterson Co., W. A., Flint, Mich. Five-Passenger Touring.....\$1895 Five-Passenger Coupe.....2985 Seven-Passenger Touring.....1925 Five-Passenger Sedan.....2985	6-3½x4½	Continental	25.3	120	33x4
Pearless 56	Pearless Motor Car Co., Quincy Ave. & S. E. 93d St., Cleveland, Ohio Roadster.....\$2990 Touring.....2990 Coupe.....3680 Sedan.....3950 Sedan Limousine.....4210	8-3½x5	Own	33.8	125	34x4½
Phianna R-20	Carpenter, M. H., 93 Sunswick St., Long Island City, N. Y. Chassis.....\$6500 Touring.....9500 Closed Car.....11500	4-3½x6	Own	24.8	135	32x4½
Piedmont 4-30	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring.....\$1485	4-3½x5	Lycoming	19.6	116	32x3½
Piedmont 6-40	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring.....\$1945	6-3½x4½	Continental	25.3	122	32x4
Pierce-Arrow 38	Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y. Chassis.....\$6000 Four-Passenger Coupe Sedan.....8500 Four-Passenger Brougham.....8500 Four-Passenger Touring.....7500 Limousine.....7750 Landulet.....9000 Vestibule Sedan.....9000 Sedan.....9000 Six-Passenger Touring.....7500 Seven-Passenger Touring.....7800 Runabout.....8000	6-4 25½	Own	38.4	124	33x5
Pilot 6-50	Pilot Motor Car Co., 281 Fort Wayne Ave., Rich- mond, Ind. Two-Passenger Roadster..... Five-Passenger Touring..... Five-Passenger Sedan..... Four-Passenger Coupe..... Seven-Passenger Touring.....	6-3½x5	Herchell-Spill	25.3	126	32x4½
Porter 46	American & British Mfg. Corp., Crescent Ave., Bridgeport, Conn. Seven-Passenger Touring.....\$9200	4-4½x6½	Own	34.6	142	35x5

Please mention The Automobile Trade Directory

METZ MASTER SIX

RUGGED and sturdy, with a wide range of power, economical to operate, comfortable to ride in, yet with all the lines and appointments that stamp it as out-of-the-ordinary.

"The Car You'll Be Proud to Own"

5 Passenger
Touring Car **\$1995**

Metz Sales Corporation
Metz Building
915-921 Boylston St., Boston, Mass.

627

pages chuck full of nationally advertised supplies and equipment, completely described, makes our catalog the standard reference book in the automotive field.

Sent free to dealers and garagemen only.

Write our nearest branch

**ELECTRIC APPLIANCE
COMPANY**

CHICAGO
SAN FRANCISCO

DALLAS
NEW ORLEANS

Used Cars Wanted

Bought Anywhere In the U. S.

Do not dispose of your car before hearing from us.

Through our traveling buyers and state representatives, we can reach you any time, anywhere in the U. S.

We buy and ship to our New York Salesrooms high class used cars of all types of bodies, and will pay cash for your car, provided the price is not prohibitive. Write or telegraph a description, stating price, and our buyer in your territory will get in touch with you, prepared to close. If near enough, telephone Columbus 2787.

The M. & M. Company, 109 to 123 W. 64th St., New York

NATIONAL USED CAR MARKET REPORT

"The Barometer of the Used Car Market"

Gives the current market value of all makes and models of used passenger cars and for each section of the United States. Used by thousands of dealers in all parts of the country. Write for full information and cost of service.

Published by

CHICAGO AUTO TRADE ASSOCIATION
2136 South Michigan Avenue

CHICAGO, ILLINOIS

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Premier-6 D	Premier Motor Corp., Indianapolis, Ind. Two-Passenger Roadster \$4600 Four-Passenger Open 4600 Seven-Passenger Open 4600 Four-Passenger Closed 6000 Seven-Passenger Limousine 6100 Four-Passenger Coupe 5600	6-3½x5½	Own	27.3	126¾	32x4½ 33x5
R & V R	R and V Motor Co., East Moline, Ill. Five-Passenger Touring \$2150 Five-Passenger Sedan 2950 Four-Passenger Coupe 2850	4-3¼x5	Own	22.5	116	32x4
R & V	R and V Motor Co., East Moline, Ill. Seven-Passenger Touring \$3350 Four-Passenger Sport 3350 Two-Passenger Roadster 3350 Seven-Passenger Sedan 4200 Four-Passenger Coupe 4000	6-3½x4½	Own	29.4	127	32x4½
Reo T-6 See page 23	Reo Motor Car Co., Lansing, Mich. Touring \$1850 Roadster 1850 Sedan 2750 Coupe 2700	6-3½x5	Own	24.3	120	33x4
ReVere F	ReVere Motor Car Corp., Logansport, Ind. Five-Passenger Touring \$4650 Four-Passenger Touring 4650 Roadster 4650 Speedster 4850 Sedan 6500	4-4½x6	Duesenberg	32.4	127	32x4½
Reamer See page 19	Barley Motor Car Co., Kalamazoo, Mich. Four-Passenger Sport Two-Passenger Speedster Four-Passenger Roadster Two-Passenger Roadster Four-Passenger Touring Seven-Passenger Touring	4-4x6	Duesenberg	25.6	130	32x4½
Roamer	Barley Motor Car Co., Kalamazoo, Mich. Four-Passenger Touring Seven-Passenger Touring Four-Passenger Sport Four-Passenger Roadster Three-Passenger Cabriolet Five-Passenger Coupe Five-Passenger Sedan Seven-Passenger Sedan	6-3½x5½	Continental	29.4	130	32x4½
Rock Falls 12	Rock Falls Mfg. Co., Sterling, Ill. Sedan Limousine	6-3½x5	Continental	33.5	136	35x5
Saxon 125	Saxon Motor Car Corp., 3733 Beaufait Ave., Detroit, Mich. Touring \$1674 Sedan 2475 Coupe 2475	4-3½x5	Own	18.2	112	32x4
Sayers-Six	Sayers & Seville Co., Gest and Summer Sta., Cincinnati, Ohio. Five-Passenger Touring \$2195 Five-Passenger Sedan 3295 Two-Passenger Roadster 2495	6-3½x4½	Continental	28.3	118	33x4
Scripps-Booth B 39-40-41-42 See page 25	Scripps-Booth Corp., Detroit, Mich. Five-Passenger Touring \$1545 Three-Passenger Roadster 1545 Five-Passenger Sedan 2295 Four-Passenger Coupe 2215	6-2½x4½	Northway	19.0	115	32x4

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Sensen L. O See page 27	Sensen Motor Car Co., Dept., 124 Fosteria, Ohio Five-Passenger Touring..... \$1185 Two-Passenger Roadster..... 1185	4-3½x4½	LeRoi	15.6	100	30x3½
Servin H	Servin Motor Co., 1608-10 Grand Ave., Kansas City, Mo..... \$2550 National Touring..... 2550 Sport..... 2550	6-3½x5½	Continental	29.4	122½	32x4½
Sheridan B 40-41-42-43	Sheridan Motor Car Co., Muncie, Ind..... Roadster..... \$1885 Touring..... 1885 Coupe..... Sedan.....	4-3½x5½	Own	21.7	116	33x4
Sheridan B 50-51-52-53	Sheridan Motor Car Co., Muncie, Ind..... Roadster..... Seven-Passenger Touring..... Coupe..... Sedan.....	8-3½x4½	Northway	39.2	132	33x5
Shelton 35	Traves Motor Co., 2229-33 Locust St., St. Louis, Mo..... Two-Passenger Roadster..... \$1295 Five-Passenger Touring..... 1295 Small Co.—See Monroe Speake Machine & Tool Co.—See Brook.	4-3½x5	Lycoming	19.6	112	32x3½
Standard	Standard Steel Car Co., Frick Bldg., Pittsburgh, Pa..... Two-Passenger Roadster..... \$3400 Four-Passenger Sport..... 3400 Seven-Passenger Touring..... 3400 Four-Passenger Coupe..... 4500 Seven-Passenger Sedan..... 4900 Four-Passenger Sedanette..... 4500 Seven-Passenger Vestibule Sedan..... 5000	8-3½x5	Own	33.8	127	34x4½
Stanwood-Sta	Stanwood Motor Car Co., Fullerton Bldg., St. Louis, Mo..... Five-Passenger Touring..... Four-Passenger..... Two-Passenger Roadster..... Coupe..... Sedan.....	6-3½x4½	Continental	25.3	118	33x4
Stearns 5K14	Stearns Co., F. B., 12435 Euclid Ave., Cleveland, Ohio..... Four-Passenger..... \$2475 Five-Passenger..... 2450 Seven-Passenger..... 2675 Roadster..... 2550 Coupe..... 2400 Limousine..... 4250 Sedan..... 3700 Town Car..... 4400	4-3½x5½	Own	22.5	125	34x4½
Stevens-Duryea	Stevens-Duryea, Chicopee Falls, Mass..... Seven-Passenger Touring..... \$8000 Four-Passenger Sport..... 8000 Four-Passenger Brougham..... 9500 Seven-Passenger Vestibule Limousine..... 9500	6-4½x5½	Own	47.2	138	35x5
Stevens-Bellows St. 43-44-45-46	Stevens Motors Works of Moline Plow Co., Freeport, Ill..... Two-Passenger Roadster..... \$2400 Four-Passenger Touring..... 2400 Five-Passenger Touring..... 2400 Five-Passenger Sedan..... 2400	6-3½x4½	Own	25.3	122	32x4½
Stoddard A. G.	Stoddard Corp. of America, Bronson & Main Sts., South Bend, Ind..... Touring..... \$2150	6-3½x5	Own	36.0	126	33x4½
Stoddard	Stoddard Corp. of America, Bronson & Main Sts., South Bend, Ind..... Touring..... \$1750 Four-Passenger Roadster..... 1750 Four-Passenger Sedan..... 1750 Four-Passenger Coupe..... 2050	6-3½x5	Own	29.4	119	32x4

See also mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Studebaker E. J.	Studebaker Corp. of America, Bronson and Main Sta., South Bend, Ind.	6-3¼x4½	Own	25.3	112	32x4
	Touring \$1435					
	Landau Roadster 1650					
	Five-Passenger Sedan 2150					
Stutz H	Stutz Motor Car Co. of America, Tenth St. & N. Capitol Ave., Indianapolis, Ind.	4-4½x6	Own	30.6	130	32x4½
	Four-Passenger Sport \$4000					
	Six-Passenger Touring 4000					
	Two-Passenger Roadster 3900					
	Two-Passenger Bearcat 3900				120	
	Coupe 5500					
Templar A-445	Templars Motor Corp., Halstead Ave., Cleveland, Ohio.	4-3½x5½	Own	18.2	118	32x4
	Sportette \$2885					
	Touring 2885					
	Touring Roadster 2885					
	Sedan 3785					
	Coupe 3785					
Tulsa E-1-2-3	Traves Motors Co. See Skelton. Tulsa Auto Mfg. Co., Tulsa, Okla.	4-3½x5	Herschell-Spill	19.6	117½	33x4
	Five-Passenger Touring \$1385					
	Three-Passenger Roadster 1385					
	Three-Passenger Oil Field Special Roadster 1385					
Tulsa F	Tulsa Auto. Mfg. Co., Tulsa, Okla.	6-3½x5	Herschell-Spill	25.	117½	33x4
	Five-Passenger Touring \$1765					
Valie 34 See page 25	Valie Motors Corp., 109 Valie Place, Moline, Ill. Five-Passenger \$1485	6-3½x4¼	Falls	23.4	112	32x3½
	Two-Passenger 1485					
	Sedan 2485					
	Coupe 2485					
Valie 48	Valie Motors Corp., 109 Valie Place, Moline, Ill. Five-Passenger \$1885	6-3½x4½	Continental	25.3	115	32x4
	Two-Passenger 1885					
	Sport 2200					
	Seven-Passenger 2250					
	Coupe 2650					
	Sedan 2650					
Vogue 6-55	Vogue Motor Car Co., S. Washington and River Sta., Tiffin, Ohio.	6-3½x5	Herschell-Spill	25.3	124	32x4
	Five-Passenger Touring \$2285					
	Seven-Passenger Sedan 3050					
	Five-Passenger Coupe 3050					
Vogue 6-66	Vogue Motor Car Co., S. Washington and River Sta., Tiffin, Ohio.	6-3½x5½	Continental	29.4	124	33x4½
	Five-Passenger Touring \$2485					
	Seven-Passenger Sedan 3250					
	Five-Passenger Coupe 3250					
Washington 1921 See page 23	Washington Motor Co., Eaton, Ohio.	6-3½x4¼	Falls	23.4	114	32x4
	Touring \$1685					
	Roadster 1685					
Wasp 211	Martin-Wasp Corp., Bennington, Vt.	4-4½x5½	Wisconsin	36.1	132	33x5
	Four-Passenger Open \$6500					
Westcott C-48	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio.	6-3½x5½	Continental	29.4	125	32x4½
	Seven-Passenger Touring \$2990					
	Seven-Passenger Sedan 4590					
	Seven-Passenger Limousine-Sedan 4690					
Westcott C-38	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio.	6-3½x4½	Continental	25.3	118	33x4
	Five-Passenger Touring \$2290					
	Two-Passenger Roadster 2290					
	Four-Passenger Coupe 3390					
	Five-Passenger Sedan 3390					
Wills Sainte Claire	Wills & Co., C. H., Marysville, Mich.	8-3½x4	Own	33.8	121	32x4½
	Two-Passenger Touring \$3500					
	Five-Passenger Touring 3500					

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A. C.C., H. P.	Wheel- base	Size of Tires
Winther Six 61 See page 17	Winther Motor Truck Co., Kenosha, Wis. Five-Passenger Touring.....	6-3½x5	Herschell-Spill	25.3	120	33x4
Willys-Knight 20 See page 25	Willys-Overland, Inc., Toledo, Ohio. (See Overland; also Willys Six.) Five-Passenger Touring Car..... Three-Passenger Roadster..... Coupe..... Sedan.....	4-3½x4½	Own	21.6	118	33x4 34x4½
Willys-Knight 8	Willys-Overland Inc., Toledo, Ohio. Touring Car..... Sedan..... Coupe..... Limousine.....	2-3½x4	Own	36.4	125	38x8
Willys Six	Willys-Overland, Inc., Toledo, Ohio. Touring Car.....	6-3½x5½	Continental	29.4	120	33x4½
Winton 25	Winton Co., 10810 Berea Rd., Cleveland, Ohio. Two-Passenger Roadster..... \$4800 Four-Passenger Sport..... 4975 Seven-Passenger Touring..... 4800 Victoria Four-Passenger..... 5950 Sedan Four-Passenger Sport..... 5950 Sedan Seven-Passenger Fore-Door..... 6200 Limousine French Town Car..... 5950 Seven-Passenger Limousine..... Three-Quarter..... 5950 Seven-Passenger, Fore-Door Limousine..... 6200 Seven-Passenger Limousine-Landaulet..... 6350 Yellow Cab Mfg. Co. See "Ambassador."	6-3½x5½	Own	33.7	132	36x5

Electric Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Make of Battery	Wheel- base	Size of Tires
Detroit 86-88	Detroit Electric Car Co., 6561 Mt. Elliott Ave., Detroit Mich. Four-Passenger Rear Drive Brougham..... \$4000 Five-Passenger, Duplex Drive Brougham.... 4000	Own	100	33x4½
Milburn 27L	Milburn Wagon Co., Monroe St., Toledo, Ohio..... Five-Passenger Brougham..... \$3985	Philadelphia	105	33x4
Rauch & Lang B 46 C 55 (See page 27)	Rauch & Lang, Chicopee Falls, Mass. Brougham..... Coach.....	Philadelphia (Exide)	92 102	33x4½

Steam Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	H. P.	Wheel- base	Size of Tires
Stanley 735 A. B. C. D.	Stanley Motor Carriage Co., 44 Hunt St., Newton, Mass. Five-Passenger Touring..... \$3950 Seven-Passenger Touring..... 3950 Four-Passenger Coupe..... 5650 Seven-Passenger Sedan..... 5775	20	130	34x4½

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.A.C. H.P.	Wheels	Size of Tires		Price
							Front	Rear	
	Abbott-Downing Truck & Body Co.—See Concord.								
Acason..... See page 35	Acason Motor Truck Co., 431 Brooklyn Ave., Detroit, Mich.	1	4-3½x5½	Waukesha	22.5	142	36x3½	36x5	.....
	Model R.....	1½	4-3½x5½	Waukesha	22.5	142	36x3½	36x6	.....
	Model RB.....	2½	4-4½x5½	Waukesha	30.6	150	36x7	36x8	.....
	Model H.....	3½	4-4½x5½	Waukesha	30.6	180	35x5	36x5D	.....
	Model L.....	5	4-5 x6½	Waukesha	40.0	187	36x8	40x8D	.....
	Model M.....								
Ace.....	American Motor Truck Co., 10th St. & B. & O. R. R., Newark, Ohio.	1½	4-3½x5	Buda	22.5	144	35x8P	38x7	.....
	Model.....	2½	4-4½x5½	Buda	28.9	144	36x4	38x7	.....
						158			
Acme..... See page 43	Acme Motor Truck Co., 410 Mitchell St., Cadillac, Mich.	¾	4-3½x5	Continental	22.5	130	34x5P	34x5P	\$1790
	Model G.....	1	4-3½x5	Continental	22.5	130	34x3½	34x8	\$1775
	Model B.....	1½	4-3½x5	Continental	22.5	141	34x3½	34x8	\$2475
	Model A.....	2	4-4½x5½	Continental	27.2	148	36x4	36x7	\$3850
	Model C.....	3½	4-4½x5½	Continental	32.4	168	36x5	40x10	\$4950
	Model E.....	5	4-4½x6	Continental	36.1	180	36x6	40x10	\$1550
Akron-Mulld	Thomart Motor Co., Akron, Ohio								
	Model 20.....	½	4-4x5½	Hinkley	25.6	133½	34x5P	34x5P	....
All-American See page 941	All-American Truck Co., 6503 West Grand Avenue, Chicago, Ill.	1½	4-3½x5	Herschell-Spill	16.9	130	32x4P	32x4P	1595
All Power	All Power Truck Co., 127 Woodbridge Ave. N., Detroit, Mich.	8	4-4½x6½	Continental	27.2	168	36x6	36x10	6000
	Model O.....								
	American Motor Truck Co.—See Ace.								
American.....	American Motor Truck & Tractor Co., 110 W. 40th St., New York, N. Y.	2½	4-4x6	Wisconsin	25.6	158	36x4	36x4D	.....
	Model 25.....	4	4-4½x6	Wisconsin	32.4	168	36x5	36x5D	.....
	Model 40.....								
Apex.....	Hamilton Motors Co., Fulton St., Grand Haven, Mich.	1	4-3½x5	Lycoming	22.5	130	33x5P	33x5P	1675
	Model G.....	1½	4-3½x5½	Buda	19.6	130	32x3½	32x4	1916
	Model E.....	2½	4-4½x5½	Buda	28.9	160	36x4	36x6	2695
	Model F.....	3½	4-4½x6	Buda	32.4	168	36x5	36x10	3975
Armleder.....	Armleder Co., O., Plum, Charles & 12th Sts., Cincinnati, Ohio.	1	4-3½x5½	Buda	22.5	148	34x3½	34x5	....
	Model 20.....	2½	4-4½x5½	Buda	28.9	148	36x4	36x7	....
	Model H. W.....					166			
	Model K. W.....	3½	4-4½x6	Buda	32.4	168	36x5	36x5D	....
						188			
Atco.....	American Truck & Trailer Corp., Stoddard Pl., Kankakee, Ill.	1½	4-3½x5½	Buda	22.5	132	34x5P	36x6	2700
	Model B.....	1½	4-3½x5½	Buda	22.5	132	34x5P	36x6P	2450
	Model B1.....	2½	4-4½x5½	Buda	28.9	160	36x4P	36x7	3150
	Model A.....								
Atlas.....	Atlas Truck Corp., York, Pa.	1	4-3½x5	Lycoming	19.6	130	32x4½P	32x4½P	....
	Model 21.....								
Atterbury..... See page 43	Atterbury Motor Car Co., Buffalo, N. Y.	1½	4-3½x5	Continental	22.5	144	34x3½	34x5	2775
	Model 7 C.....	2½	4-4½x5½	Continental	27.2	153½	36x4	36x4D	3375
	Model 7 D.....	3½	4-4½x5½	Continental	32.4	167½	36x5	40x5D	4175
	Model 8 E.....	5	4-4½ x6	Continental	36.1	167½	36x5	40x6D	5575
Autocar.....	Autocar Co., Lancaster Ave., Ardmore, Pa.	2	2-4½x4½	Own	18.1	97	34x4P	34x5P	2300
	Model XXI-F.....	2	2-4½x4½	Own	18.1	120	34x4	34x5	2400
	Model XXI-G.....								
	Model XXVI-Y.....								
	Model XXVI-B.....								

Please mention The Automobile Trade Directory

LUEDINGHAUS

Quality Motor Trucks

*Are you in a position to
profit by a franchise?*

Here is a truck built throughout on a leadership basis of quality that has definitely and permanently placed it in a class by itself in performance, low operating and upkeep cost and long life.

A Luedinghaus franchise is valued on the basis of its being the soundest selling proposition of any truck.

Remember that not only from the viewpoint of the quality of the truck, but from the viewpoint of dealer policies, the Luedinghaus has 78 successful years in the building of high class transportation vehicles back of it.

Our dealer policies will be placed before you upon request. Write, wire or 'phone.

LUEDINGHAUS

Quality Motor Trucks

Broadway, Howard to Mound St., St. Louis

1, 1½, 2-2½ Ton



NAPOLEON TRUCKS
Model 9, One Ton Capacity Chassis
Wheel base 133 inches
\$1535

Model 11, 1½ Ton Capacity
Wheel base, 133 inches
Chassis \$1860

12 Big Sales Points for You

GRAY Overhead Valve Motor
CLARK Internal Gear Drive Axle
SHULER Roller Bearing Front Axle
FULLER Transmission
FIRESTONE Tires
WILKARD Storage Battery
CONNECTICUT Ignition
DETROIT STEEL PRODUCTS CO.
Graded Springs
ELECTRIC-AUTO-LITE Generator
UNIVERSAL PRODUCTS CO. Universal Joint
CHICAGO MFG. CO. Army Type Radiator
NAPOLEON Double Reinforced Frame

Write or wire for territory and reservations at once and become a unit of this successful organization whose product is fast dominating the motor freight highways of America.

NAPOLEON MOTORS COMPANY
Traverse City, Mich.

A Perfect Balanced Truck



Sanford Trucks

For Immediate Deliveries

Worm-Drive—2½, 3½, 5 ton

Sanford Service earns repeat orders. Get our attractive agents' contract. Some open territory.

Sanford Motor Truck Co.
Syracuse, N. Y.



Stewart Trucks are

- simple to operate
- strong in daily service
- all truck from the ground up.

The very first ones made—still serve the needs of trade.

Made in Six Capacities

STEWART MOTOR CORPORATION

Buffalo, N. Y., U. S. A.

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheels	Size of Tires		Price
							Front	Rear	
Available.....	Available Truck Co., 1801-49 N. Kilpatrick Ave., Chicago, Ill.								
	Model H11½.....	1½	4-4 x5½	Hercules.....	35.6	147	36x3½	36x5	\$2750
	Model H21½.....	2½	4-4 x5½	Hercules.....	25.6	155½	36x4	36x5	2475
	Model H3½.....	3½	4-4½x5½	Hercules.....	33.4	179	36x5	40x5D	4475
	Model H5.....	5	4-4½x5	Hercules.....	36.1	188	36x5	40x12	5375
	Model H7.....	7	4-5 x5	Hercules.....	40.0	190	36x5	40x14	6000
Avery.....	Avery Co., 949 Iowa St., Peoria, Ill. Model L.....	1½	6-3x4	Own.....	21.6	129	34x5	34x5	1980
Beck.....	Beck-Hawkeye Motor Truck Works, 901-13 First Ave. W., Cedar Rapids, Iowa. Model A Jr. 30.....	.....	4-3½x5	Herschell-Spill.....	19.6	132	32x4½P	33x5P	2300
	Model A 30.....	1½	4-3½x5	Herschell-Spill.....	19.6	132	32x4½P	33x5P	1950
	Model B 30.....	1½	4-3½x5	Continental.....	22.5	133	34x5	36x5	2350
	Model C 40.....	2	4-3½x5	Herschell-Spill.....	22.5	144	36x5	36x5	2875
	Model D 50.....	2½	4-4½x5½	Continental.....	27.2	144	38x7	40x8	3150
Bell.....	Bell Motor Car Co., York, Pa.	¾	4-3½x4½	G. B. & S.....	22.5	115	31x4P	31x4P	1150
See page 19									
Belmont.....	Belmont Motors Corp., 29 N. Second St., Harrisburg, Pa. Model B.....	¾	4-3½x4½	G. B. & S.....	22.5	113	34x4	34x4	.....
	Model C.....	1½	4-3½x5	Wisconsin.....	22.5	144	36x3½	36x5	.....
		3½	4-4 x5	Wisconsin.....	26.6	152	36x5	36x5D	.....
Bessemer.....	Bessemer Motor Truck Co., Greve City, Pa. Model G.....	1	4-3½x5	Continental.....	19.6	124	35x5P	35x5P	1825
See page 47									
	Model H-2.....	1½	4-3½x5	Continental.....	22.5	144	36x3½P	36x5	2445
	Model J-2.....	2½	4-4½x5½	Continental.....	27.2	158	36x4	36x4D	3295
	Model K-2.....	4	4-4½x5½	Continental.....	32.4	175	36x5	36x10	4485
Bethlehem.....	Bethlehem Motor Corp., 40 E. Walnut St., Allentown, Pa. Model E.....	1	4-3½x5	Own.....	19.6	125	34x4½	35x5	.....
	Model H.....	2	4-4 x5½	Own.....	25.6	135	34x3½	34x5	.....
	Model J.....	3	4-4 x5½	Own.....	25.6	143	36x4	36x5	.....
	Model K.....	4	4-4½x5½	Own.....	32.4	162	36x5	36x5D	.....
Birch.....	Birch Motor Cars, 81 E. Madison St., Chicago, Ill. Model 37.....	1	4-3½x5	Gray.....	19.6	132	32x3½	32x4	1595
Brinton.....	Brinton Motor Truck Co., 5805 Market St., Philadelphia, Pa. Model F.....	2½	4-4½x5½	Continental.....	27.2	150	36x4	36x7	3400
Briscoe.....	Briscoe Motor Corp., Jackson, Mich. Model 4-34 (Open Del.).....	1	4-3½x5	Own.....	18.2	109	31x4P	31x4P	.....
Brookway.....	Brookway Motor Truck Co., Cortland, N. Y. Model ¾.....	¾	4-3½x5½	Buda.....	22.5	135	35x5P	35x5P	1675
	Model 8-4.....	1½	4-3½x5	Continental.....	22.5	140	36x3½	36x5	2250
						121			
	Model K-5.....	2½	4-4½x5½	Continental.....	27.2	152	36x4	36x7	3200
						176			
						189			
	Model R-4.....	3½	4-4½x5½	Continental.....	32.4	164	36x5	36x5D	4100
						190			
	Model T.....	5	4-4½x6	Continental.....	36.1	174	36x6	40x6D	5250
						204			
Champion.....	Camden Motors Corp.—See Frontmobile. Champion Motors Corp., Harrison Bldg., Philadelphia, Pa. Model ¾.....	¾	4-3½x5	Lycoming.....	19.6	118	32x3½P	32x3½P	1325
Chevrolet.....	Chevrolet Motor Co., 224 W. 57th St., New York, N. Y. Model T.....	1	4-3½x5½	Own.....	21.7	125	33x4P	35x5P	1325
	Model G.....	¾	4-3½x4	Own.....	21.7	120	31x4P	34x4½P	920
	Model 490.....	¾	4-3½x4	Own.....	21.7	102	30x3½P	30x3½P	820
Chicago.....	Chicago Motor Truck, 335 W. 28th Pl., Chicago, Ill. Model C1½.....	1½	4-3½x5½	Hercules.....	22.5	144	36x3½	36x5	.....
	Model C2½.....	2½	4-4 x5½	Hercules.....	25.6	156	36x4	36x7	.....
	Model C3½.....	3½	4-4½x5½	Hercules.....	32.4	168	36x5	36x10	.....
	Model D3.....	5	4-4½x5½	Hercules.....	32.4	167	36x5	40x12	.....
Climber.....	Climber Motor Corp., Little Rock, Ark. Model A-20.....	1½	4-3½x5	Herschell-Spill.....	19.6	146	36x6	38x7	245

Please mention The Automobile Trade Directory

One Copy of Your Catalog

—IF YOU PLEASE

THE AUTOMOBILE TRADE DIRECTORY

243 West 39th St., New York

AN easy way in which the manufacturer may keep his buyers informed of what he is doing, of what he has to offer them in the way of new goods, is to keep sending us, regularly, his catalogs and other selling literature.

This gives us an opportunity to make changes and additions and to insure the correctness of our classification of the manufacturer's various products. Your catalog in our files is a cheap insurance against the possibility of error and omission. **SEND US YOUR CATALOGS.**

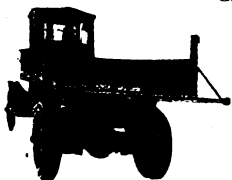
ACME

Because Acme is a truck of proved units—because it is a truck of unusually strong and durable construction—and because it is known to the truck buyer as a thoroughly dependable haulage unit—the Acme dealer franchise is one of the real opportunities in the industry.

Write for complete information

Built in $\frac{1}{4}$, 1, 1 $\frac{1}{2}$, 2, 3 $\frac{1}{2}$ and 5 ton models

ACME MOTOR TRUCK COMPANY
410 Mitchell St. Cadillac, Mich.



On the radiator of every Acme is this Seal of dependable performance



Trade Mark registered U. S. and other countries

ATTERBURY

MOTOR TRUCKS OF MAXIMUM SERVICE

WE do not claim that the Atterbury is the "best motor truck"—

But we do know that there is no better truck built today.

Behind the Atterbury is a record of eleven years' satisfactory service to owners—the best evidence that the Atterbury Franchise is a paying investment.

Atterburys are made in 1 $\frac{1}{2}$, 2 $\frac{1}{2}$, 3 $\frac{1}{2}$ and 5-ton capacities.

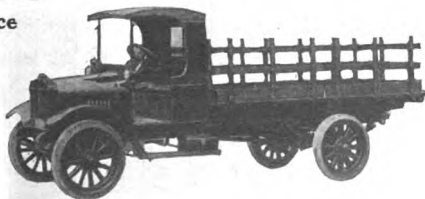
Atterbury Motor Car Co.
Buffalo, N. Y.

WOLVERINE

The Truck of Good Service

Motor—Continental, 3 $\frac{1}{4}$ " x 5" stroke. Thermo-Syphon cooled.
Ignition—Two unit Starting.
Lighting and Ignition system—
together with Magneto and
storage battery.
Rear Axle—Russell Internal
Gear Drive.
Wheelbase—140 inches.
Illustrated catalog and complete
details mailed upon request.
Write us today.

1 $\frac{1}{2}$ Ton Truck



THE AMERICAN COMMERCIAL CAR CO., Detroit, Mich.

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

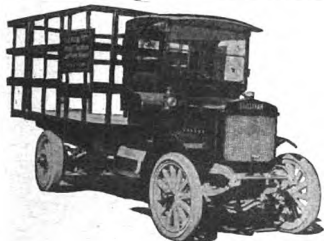
Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Capacity, Tons	No. of Cylinders, Bore and Stroke, in.	Make of Engine	N.A.A.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Clydesdale. See page 53	Clydesdale Motor Truck Co., Clyde, Ohio	1	4-31/2x5 1/2	Own.	22.5	144	34x3 1/2	34x5	\$2375
		1 1/2	4-4x5 1/2	Own.	25.6	146	36x4	36x6	2750
		5	4-4x5 1/2	Own.	36.1	176	36x6	40x12	5500
		3 1/2	4-4 1/2 x 5 1/2	Own.	32.4	170	36x5 1/2	40x10	4400
		2 1/2	4-4 1/2 x 5 1/2	Own.	28.8	163	36x4	36x7	3540
Collier. See page 51	Collier Motor Truck Co., Ballerus, Ohio.	1	4-31/2x5	Continental.	19.6	140	34x4	34x5	.....
		1 1/2	4-3 1/2 x 5	Continental.	22.5	144	36x4	36x6	.....
		2	4-4 1/2 x 5 1/2	Continental.	27.2	152	36x4	36x7	.....
		2 1/2	4-4 1/2 x 5 1/2	Continental.	27.2	165	36x4	36x4D	.....
		2 1/2	4-4 1/2 x 5 1/2	Continental.	27.2	165	36x4	36x4D	.....
Columbia.	Columbia Motor Truck Co., Sanford St. Pontiac, Mich.	1 1/2	4-3 1/2 x 5	Continental.	22.5	140	34x5P	34x5	.....
		2 1/2	4-4 1/2 x 5 1/2	Hinkley.	25.6	147	36x4	36x7	.....
Comet. See page 31	Comet Automobile Co., 875-69 Garfield Ave., Decatur, Ill.	1 1/2	4-3 1/2 x 5	Lycoming.	19.6	130	33x4P	33x4	1950
		1 1/2	4-3 1/2 x 5	Lycoming.	19.6	130	33x4P	33x4	1950
Commerce. See page 51	Commerce Motor Car Co., Detroit, Mich.	3/4	4-3 1/2 x 5	Continental.	22.5	127	34x4 1/2P	34x4 1/2P	1460
		1 1/2	4-3 1/2 x 5	Continental.	22.5	127	35x5	35x5	1800
		2	4-3 1/2 x 5	Continental.	22.5	138	36x6	36x6	2150
Concord.	Abbot-Downing Truck & Body Co., 8 Main St., Concord, N. H.	1 1/2	4-4 1/2 x 5 1/2	Buda.	25.6	140	36x3 1/2	36x5	2800
		1 1/2	4-4 1/2 x 5 1/2	Buda.	25.6	140	36x3 1/2	36x5	2900
		2 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	160	36x4	36x8	3400
		2 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	170	36x4	36x8	3400
		2 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	170	36x4	36x8	3400
Corbitt.	Corbitt Motor Truck Co., Henderson, N.C.	1	4-3 1/2 x 5	Continental.	22.5	130	34x3 1/2	24x4	.....
		1 1/2	4-3 1/2 x 5	Continental.	22.5	140	36x3 1/2	36x5	.....
		2	4-4 1/2 x 5 1/2	Continental.	27.2	148	36x3 1/2	36x7	.....
		2 1/2	4-4 1/2 x 5 1/2	Continental.	27.2	148	36x4	36x7	.....
		3 1/2	4-4 1/2 x 5 1/2	Continental.	32.4	178	36x5	36x10	.....
Couple-Gear.	Couple-Gear Electric Truck Co., 1450 Buchanan Ave., Grand Rapids, Mich.	5	4-5 1/2 x 6	Wisconsin.	42.0	144	36x4	36x4	6100
		5	4-5 1/2 x 7	Wisconsin.	42.0	144	36x5	36x5	6700
		7	4-5 1/2 x 7	Wisconsin.	52.9	144	36x6	36x6	7450
		5	4-5 1/2 x 6	Wisconsin.	42.0	144	36x4	36x4	6100
		5	4-5 1/2 x 7	Wisconsin.	42.0	144	36x5	36x5	6700
Dart.	Dart Truck & Tractor Corp., Waterloo, Iowa.	1 1/2	4-3 1/2 x 5 1/2	Buda.	22.5	140	34x3 1/2	34x6	2250
		2 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	160	36x4	36x7	3000
		3 1/2	4-4 1/2 x 6	Buda.	32.4	160	36x5	36x10	4000
Day-Elder.	Day-Elder Motors Corp., 120 Coit St., Irvington, N. J.	1	4-3 1/2 x 5	Continental.	22.5	128	34x3 1/2	34x4	2100
		1 1/2	4-3 1/2 x 5	Continental.	22.5	144	34x3 1/2	34x5	2300
		2	4-4 1/2 x 5 1/2	Continental.	27.2	144	36x4	34x7	2750
		3 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	160	36x4	36x7	2800
		3 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	165	36x4	36x7	2850
Dearborn.	Dearborn Truck Co., Chicago, Ill.	1 1/2	4-3 1/2 x 5 1/2	Continental.	22.5	144	34x3 1/2	34x4	2100
		1 1/2	4-3 1/2 x 5 1/2	Continental.	22.5	144	34x3 1/2	34x5	2300
		2	4-4 1/2 x 5 1/2	Continental.	27.2	144	36x4	34x7	2750
		3 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	160	36x4	36x7	2800
		3 1/2	4-4 1/2 x 5 1/2	Buda.	28.9	165	36x4	36x7	2850
Defiance.	Defiance Motor Truck Co., Seneca St., Defiance, Ohio	1 1/2	4-3 1/2 x 5	Highway.	22.5	160	36x5	36x6	2550
		2	4-3 1/2 x 5	Highway.	22.5	160	36x5	36x7	2750
		2	4-3 1/2 x 5	Highway.	22.5	160	36x5	36x7	2750
		2	4-3 1/2 x 5	Highway.	22.5	160	36x5	36x7	2750
		2	4-3 1/2 x 5	Highway.	22.5	160	36x5	36x7	2750

Please mention The Automobile Trade Directory

Sullivan Motor Trucks

1½-2-3½ Ton
All Models Worm Driven



Highest Grade Units Used Throughout

Buda Motor
Bosch Magneto
Timken Front Axle
Bosch Steering Gear
Timken Worm Drive Rear Axle
Brown-Lipe Transmission
Brown-Lipe Clutch
Stromberg Carburetor

Dealers invited to write for our proposition.

**SULLIVAN MOTOR
TRUCK CORP.**
ROCHESTER NEW YORK

Traffic Truck

4000 LBS CAPACITY

The lowest priced
4000-lb. capacity truck
in the world

chassis

\$1595
factory

Specifications:

Red Seal Continental 3½x5 motor; Covert transmission; multiple disc clutch; Bosch magneto; Carter carburetor; 4-piece cast shell, cellular type radiator; Detroit Steel Products Springs; Standard and Thermoid universal joints; drop forged front axle with Timken roller bearings; Russell rear axle, internal gear, roller bearings; semi-elliptic front and rear springs; 6-inch U-channel frame; Standard Fisk tires, 34x3½ front, 34x5 rear; 133-inch wheel-base; 122-inch length of frame behind driver's seat; oil cup lubricating system; chassis painted, striped and varnished; driver's lazy-back seat and cushion regular equipment. Pneumatic cord tire equipment at extra cost.

DEALERS: There is some valuable territory available for dealers who realize the advantages of a direct factory connection.

Traffic Motor Truck Corp., St. Louis, U. S. A.

TITAN

2½-Ton, 3½-Ton and 5-6 Ton

**INTERNAL-GEAR
DRIVE TRUCKS**



SPECIFICATIONS

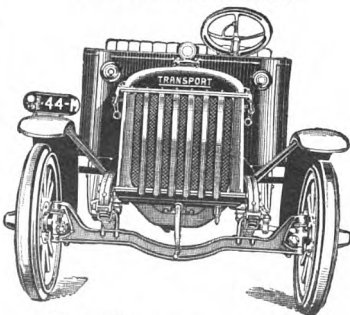
Buda Motor—Eiseman Magneto
—Stromberg Carburetor.
Cotta Transmission, 4 speeds forward.
Clark Internal-Gear Rear Axle with radius rods.
Electric-Lights, Cab and Windshield are standard equipment—no extra charge.

TITAN TRUCK CO.
MILWAUKEE WISCONSIN

Please mention The Automobile Trade Directory

TRANSPORT TRUCKS

Internal Gear Drive



Model 20—1-ton	\$1850
Model 30—1½-ton	2250
Model 50—2½-ton	2785
Model 70—3½-ton	4195

Write for details of our dealer proposition.

TRANSPORT TRUCK COMPANY
Mount Pleasant, Michigan, U. S. A.

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Denby See page 55	Denby Motor Truck Co., Detroit, Mich. Model 33..... Model 134..... Model 25..... Model 27..... Model 210.....	1½ 2 3 4 5	4-3½x5 4-3½x5 4-4½x5½ 4-4½x5½ 4-4½x5½	Continental..... Continental..... Continental..... Continental..... Continental.....	22.5 22.5 27.2 32.4 32.4	136 144 150 170 170	35x5P 36x6 36x4 36x5 36x6	38x7 36x6 36x7 36x5D 40x6D	\$2300 2800 3600 4600 5350
Dependable..... See page 51	Dependable Truck & Tractor Co., Galesburg, Ill. Model A..... Model C..... Model D..... Model E..... Model G.....	¾-1 1½ 2 2½ 3½	4-3½x5½ 4-3½x5½ 4-4½x5½ 4-4½x5½ 4-4½x6	Buda..... Buda..... Buda..... Buda..... Buda.....	21.0 22.5 25.6 28.9 32.4	134 149 149 157 138 160	34x5P 34x5P 34x5 36x4 36x6	36x6P 34x5 36x6 38x7 40x6D	1650 2350 2650 2950 3550
Diamond T.....	Diamond T. Motor Car Co., 4517 W. 26th St., Chicago, Ill. Model O..... Model PS..... Model T..... Model U..... Model K..... Model EL..... Model S.....	1½ 1½ 1½ 3½ 5 5	4-3½x5½ 4-3½x5½ 4-3½x5½ 4-4½x5½ 4-4½x5½ 4-4½x5½ 4-4½x6	Hinkley..... Hinkley..... Hinkley..... Hinkley..... Hinkley..... Hinkley..... Class B Liberty	22.5 22.5 22.5 25.6 28.9 32.4 36.1	132 Opt. Opt. Opt. Opt. Opt. Opt.	34x5P 36x3½ 36x3½ 36x4 36x5 36x6 36x6	26x6P 36x5 36x5 36x7 36x5D 40x6D 40x6D	2500 2960 2650 3285 4675 5400 5650
Dispatch.....	Dispatch Motor Car Co., 1200-14th Ave. S. E., Minneapolis, Minn. Model G.....	1	4-3½x5	Wisconsin.....	16.9	120	34x4P	34x4P	.....
Doane.....	Doane Motor Truck Co., 428 Third St., San Francisco, Cal. Model..... Model..... Model.....	2½ 3½ 6	4-4½x5½ 4-4½x5½ 4-5 x6½	Waukesha..... Waukesha..... Waukesha.....	28.9 30.6 40.0	147 172 178	36x5 36x5 36x6	36x7 36x5D 40x6D	4100 5100 6000
Dodge..... See page 21	Dodge Bros., 1678-1724 Jas. Campau Ave. Detroit, Mich. Model.....	½	4-3½x4½	Own.....	24.0	114	33x4P	33x4P	1085
Dorris.....	Dorris Motor Car Co., 4100 Laclede Ave. St. Louis, Mo. Model K-4..... Model K-7.....	2½ 3½	4-4½x5½ 4-4½x5½	Own..... Own.....	28.9 28.9	144 154 174 194	36x4 36x5	36x7 36x10	3400 4400
Double Drive.....	Double Drive Truck Co., 4826 W. Kinzie St., Chicago, Ill. Model Four Wheel Drive B..... Model Front Wheel Drive C.....	3 1½	4-4½x5½ 4-3½x5½	Buda..... Buda.....	28.9 22.5	130 Opt.	36x6 34x5	36x6 34x4	4000 4800
Douglas.....	Douglas Motors Corp., 30th & Sprague Sts., Omaha, Neb. Model GW..... Model G..... Model H..... Model I.....	1½ 1½ 2 3	4-3½x5½ 4-3½x5½ 4-4½x5½ 4-4½x5½	Weidely..... Buda..... Buda..... Buda.....	22.5 22.5 28.9 28.9	130 130 136 138	34x3½ 34x3½ 34x4 36x5	34x5 34x5 36x7 36x8	..... ..... ..... .....
Duplex.....	Duplex Truck Co., Washington & Mt. Hope Aves., Lansing, Mich. Model A..... Model B.....	1½ 3½	4-4 x5½ 4-4½x5½	Hinkley..... Buda.....	25.6 28.9	145 130	35x5P 36x8	38x7P 36x8	2775 4250
F. W. D..... See page 53	Four Wheel Drive Auto Co., Dept. 120, Clintonville, Wis. Model B.....	3	4-4½x5½	Wisconsin.....	36.1	124	36x6	36x6	4900
Fageol.....	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal. Model..... Model..... Model..... Model.....	1½ 2½ 3½ 5	4-3½x5½ 4-4½x5½ 4-4½x6½ 4-4½x6½	Waukesha..... Waukesha..... Waukesha..... Waukesha.....	22.5 28.9 32.4 32.4	136 144 172 172 190 154 172 190	34x3½ 34x4 36x5 36x6	34x6 36x7 36x5D 40x6D	3000 3900 5000 5700
Fageol.....	Fageol Motors Co., of Ohio, Cleveland, O. Model..... Model.....	2½ 3½	4-4½x5½ 4-4½x6½	Waukesha..... Waukesha.....	30.6 32.4	150 172 190	36x4 36x5	36x7 40x5D	3900 4900

Please mention The Automobile Trade Directory

*A Large Number
of Repeat Orders
from Well Satis-
fied Union Own-
ers Proves Union
Design and Con-
struction to be
Strong, Power-
full and Depend-
able.*

UNION

MOTOR TRUCKS

Union Motor Truck Company
BAY CITY MICHIGAN

BESSEMER TRUCKS

"Built to Last"

A Real Truck—Made up of
real units of ample propor-
tion that are built
together.

□ □ □

A REPUTATION BUILT
ON REPEAT ORDERS

□ □ □

BESSEMER MOTOR
TRUCK CO.

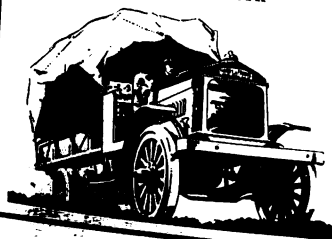
GROVE CITY, PENNSYLVANIA



THE PEDIGREED MOTOR TRUCK

Agencies Now Being Closed

Ward La France Truck Corporation
Elmira, New York



HAWKEYE MOTOR TRUCKS



If you are interested in specifications—
Hawkeye Trucks compare favorably with
any Truck in America.

If you are interested in performance—
Hawkeye Trucks can show you a very en-
viable record, wherever they have been
introduced.

If you are interested in price—Hawkeye
Trucks, while not the cheapest, retail at
a very moderate price, for the quality of
the truck.

We should welcome an opportunity to
give you more information.

HAWKEYE TRUCK CO.

Manufacturers

Iowa

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Famous.....	Famous Truck Co., 1001 Broad St., St. Joseph, Mich. Model B-10..... Model B-12..... Model B-20.....	1	4-3½x5	Continental.....	19.6	120	36x3½	36x4	.....
		1½	4-3½x5	Continental.....	22.5	138	36x3½	36x6	.....
		2	4-3½x5	Continental.....	22.5	138	36x4	36x6	.....
Fargo..... See page 611.....	Fargo Motor Car Co., 1162-64 W. 22d St., Chicago, Ill. Model R.....	2	4-3½x5	Continental.....	22.5	140	36x4	36x6	.....
Federal..... See page 51.....	Federal Motor Truck Co., Federal & Campbell Sts., Detroit, Mich. Model SD..... Model SE..... Model TE..... Model TE..... Model UE..... Model NE..... Model WE..... Model WE..... Model XE.....	1	4-3½x5	Continental.....	22.5	132	35x5P	36x6P	\$2500
		1½	4-3½x5	Continental.....	22.5	132	35x5P	36x6P	2500
		1½	4-4½x5½	Continental.....	27.2	144	36x3½	36x5	2725
		2	4-4½x5½	Continental.....	27.2	144	36x3½	36x5	2725
		2	4-4½x5½	Continental.....	27.2	156	36x4	36x7	3025
		2½	4-4½x5½	Continental.....	27.2	156	36x4	36x7	3025
		3½	4-4½x5½	Continental.....	32.4	166	36x5	36x5D	3950
		4	4-4½x5½	Continental.....	32.4	156	36x5	36x5D	3950
		4	4-4½x5½	Continental.....	32.4	156	36x6	40x6D	4600
		5	4-4½x5½	Continental.....	32.4	156	36x6	40x6D	4600
Ford.....	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich. Model T.....		4-3½x4	Own.....	22.5	124	30x2P	32x3½P	545
Forschler.....	Forschler Motor Truck Mfg. Co., 120-40 N. Claiborne Ave., New Orleans, La. Model A..... Model AX..... Model B..... Model BX.....	1	4-3½x5	Continental.....	19.6	120	34x3	34x4	.....
		1½	4-3½x5	Continental.....	19.6	120	30x3½	36x5	.....
		2	4-4½x5½	Continental.....	27.2	137	36x4	36x7	.....
		3	4-4½x5½	Continental.....	27.2	137	36x4	36x8	.....
Frisbee.....	Frisbee Truck Co., Webberville, Mich. Model A.....	2½	4-4½x5½	Continental.....	27.2	144	34x4	36x7	2850
Frontmobile.....	Camden Motors Corp., Park Avenue & White Horse Pike, Collingswood, N. J. Model F M.....	1½	4-3½x5	Herschell-Spill.....	19.6	120	36x6	36x6	2600
Fulton.....	Fulton Motors Corp., 240 W. 59th St., New York, N. Y. Model A..... Model C.....	1	4-3½x5	Own.....	19.6	130	35x5P	35x5P	.....
		2	4-3½x5	Own.....	19.6	137	34x4	34x6	.....
G. M. C..... See page 55.....	General Motors Truck Co., Pontiac, Mich. Model K..... Model K16..... Model K41..... Model K71..... Model K101.....	¾	4-3½x5½	Own.....	19.6	132	33x4½	33x4½	.....
		1	4-3½x5½	Own.....	19.6	132	33x4½	33x4½	.....
		2	4-4½x6	Own.....	25.6	158	36x4	36x7	.....
		3½	4-4½x6	Own.....	32.4	187	36x5	40x5D	.....
		5	4-4½x6	Own.....	32.4	187	36x5	40x6	.....
Garford.....	Garford Motor Truck Co., Wapak Rd., Lima, Ohio. Model 25B..... Model 70 H..... Model 77-D..... Model 68D.....	1½	4-3½x5½	Buda.....	22.5	135	36x3½	36x4	.....
		2	4-4½x5½	Buda.....	28.9	144	36x4	36x7	.....
		3½	4-4½x6	Buda.....	32.4	182	36x5	38x5D	.....
		5	4-5 x6½	Buda.....	40.0	182	36x6	40x6D	.....
Gary..... See page 53.....	Gary Motor Truck Co., Gary, Ind. Model F..... Model GT..... Model J..... Model KT..... Model M.....	1	4-3½x5	Buda.....	22.5	130	36x3½	36x4	2100
		1½	4-4½x5½	Buda.....	25.6	144	36x3½	36x5	2550
		2½	4-4½x5½	Buda.....	28.9	146	36x4	36x7	3150
		3½	4-4½x6	Buda.....	32.4	162	36x5	40x5D	4150
		5	4-5 x6½	Buda.....	40.0	182	36x6	40x6D	5150
Geneva.....	Geneva Wagon Co., Geneva, N. Y. Model B.....	¾	2-5½x4½	Beaver.....	21.0	100	34x2P	36x3½P	700
Gersix.....	Gersix Mfg. Co., 600-04 Fairview Ave. N., Seattle, Wash. Model K..... Model M..... Model L.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	.....
		1½	4-4½x5½	Buda.....	25.6	142	36x3½	36x6	.....
		3½	4-4½x6½	Buda.....	32.4	170	36x5	40x12	.....
Giant.....	Giant Truck Corp., Chicago Heights, Ill. Model 15 A..... Model 16..... Model 17..... Model 18.....	1½	4-3½x5	Continental.....	22.5	138	34x4½	34x5	2425
		2½	4-4½x5½	Continental.....	27.2	144	36x5	36x7	3850
		3½	4-4½x5½	Continental.....	32.4	176	36x6	38x10	4450
		5	4-4½x5½	Continental.....	32.4	194	40x6	40x10	5500

Please mention The Automobile Trade Directory



TRIANGLE
MOTOR TRUCKS
ST. JOHN, MICHIGAN, U. S. A.

There are no weak spots in the TRIANGLE.

It sells easily, and stays sold because it continues to give dependable service under the most adverse conditions.

The 2½-ton size, shown below, possesses unusual power, and a very large reserve load capacity. It turns around in a circle of 27-foot radius.

Address the Factory, Dept. V.

TRIANGLE
MOTOR TRUCK COMPANY
St. John, Michigan, U. S. A.

"Solid as the Pyramids"



*Quality Trucks built in the following capacities:
1½, 2½, 3½, 5 Ton.*

An Opportunity For a Few Distributors and Dealers

The Larrabee Dealers' contract is planned for the dealer's territory. It is perpetual. It has no catch phrases. It helps the dealer to make the most money out of his territory.

A letter or telegram will bring the details of the Larrabee "Selling Plan" and contract for your territory.

Larrabee-Deyo Motor Truck Co.
Binghamton, New York

Schwartz Motor Truck Corporation

Authorized Capital \$1,500,000

READING - - - PENNA.



Manufacturers of

Schwartz High Grade Heavy Duty Trucks
Worm 1½ to 5 Tons Double Reduction

With increased production in our new plant, we are closing additional territory for Schwartz Trucks. An agency for Schwartz Trucks is a valuable asset to any dealer. If you are an aggressive dealer and can handle a real proposition, write to the

SCHWARTZ MOTOR TRUCK CORPORATION
READING, PENNA.

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Strokes of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Graham.....	Graham Bros. Evansville, Ind. Model (Speed Truck)....	.....	4-3½x5	Continental.....	22.5	133	35x5P	36x6	.....
Gramm-Bernstein....	Gramm-Bernstein Motor Truck Co., Lima, Ohio. Model 65.....	1½	4-3½x5	Continental.....	22.5	138	36x3½	36x5	\$2725
	Model 15.....	1½	4-3½x5	Continental.....	22.5	138	36x3½	36x5	2050
	Model 20.....	2	4-4½x5½	Continental.....	27.2	144	36x4	36x7	3175
	Model 25.....	2½	4-4½x5½	Hinkley.....	28.9	150	36x4	36x4D	3575
	Model 35.....	3½	4-4½x5½	Hinkley.....	32.4	156	36x5	40x5D	4375
	Model 50.....	5	4-3½x6	Continental.....	36.1	168	36x6	40x6D	5275
	Model 30.....	3	4-4½x5½	Hinkley.....	32.4	150	36x6P	42x9	4575
	Model 10 (Speed Truck)	1	4-3½x5	Lycoming.....	19.6	129	33x5P	33x5P	1405
Hahn.....	Hahn Motor Truck Co., Third and Fourth Sts., Hamburg, Pa. Model J4.....	1	4-3½x5	Continental.....	22.5	132	34x5P	34x5P	.....
	Model C. D.....	1½	4-4½x5½	Continental.....	27.2	155	36x6P	36x6P	.....
	Model D. E.....	2	4-4½x5½	Continental.....	27.2	155	36x6P	36x7	.....
	Model E. E.....	2½	4-4½x5½	Continental.....	32.4	162	36x6P	36x8	.....
	Model F.....	3½	4-4½x5½	Continental.....	32.4	191	36x5	36x10	.....
	Model F. E.....	5	4-4½x6	Continental.....	36.1	193	36x6	40x12	.....
Hal-Fur.....	Hal-Fur Motor Truck Co., 1785 E. 21st Street, Cleveland, Ohio Model B.....	2½	4-4½x5½	Hinkley.....	28.9	156	35x5	36x7	3250
	Model E.....	1	4-4 x5½	Hinkley.....	28.6	138	35x5	38x5	2350
	Model F.....	3½	4-4½x5½	Hinkley.....	32.4	.....	36x5	40x10	4250
Hall..... See page 21	Lewis-Hall Motors Corp., 1926 W. Jefferson St., Detroit, Mich. Model.....	2½	4-4½x5½	Continental.....	27.2	144 / 180	36x4	36x4D	3275
	Model.....	3½	4-4½x5½	Continental.....	32.4	144 / 180	36x5	36x5D	4100
	Model (Worm).....	5	4-4½x5½	Continental.....	32.4	144	36x5	40x6D	5100
	Model (Chain).....	7	4-4½x5½	Continental.....	32.4	144	36x5	40x6D	5100
	Hamilton Motors Co.—See Apex.								
	Hare's Motors. — See Riker. Kelly-Springfield.								
	Harrisburg Mfg. & Boiler Co. — See Hurlburt.								
Harvey.....	Harvey Motor Truck Co., Harvey, Ill. Model W. E. A.....	1½	4-4½x5½	Buda.....	27.2	128	34x3½	34x5	2550
	Model W. P. A.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	3300
	Model W. H. A.....	3½	4-4½x6	Buda.....	32.4	160	36x5	36x5D	4300
	Model W. K. A.....	5	4-4½x6	Buda.....	32.4	160	36x6	40x6D	5200
Hawkeye..... See page 47	Hawkeye Truck Co., Sioux City, Iowa. Model K.....	1½	4-3½x5½	Buda.....	22.5	148½	34x3½	34x5	.....
	Model M.....	2	4-4½x5½	Buda.....	28.9	148½	36x4	36x6	.....
	Model N.....	3½	4-4½x6	Buda.....	32.4	174	36x5	36x10	.....
Hewitt-Ludlow.....	Hewitt-Ludlow-Auto Co., 901-51 Indiana St., San Francisco, Cal. Model.....	2	4-4½x5½	Buda.....	27.2	140	36x4	36x6	.....
	Model.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	.....
	Model.....	3	4-4½x5½	Buda.....	28.9	156	36x5	36x5D	.....
	Model.....	5	4-4½x6	Buda.....	32.4	168	36x6	40x6D	.....
Higrade.....	Higrade Motors Co., Harbor Springs, Mich. Model A17.....	¾	4-3½x5	Continental.....	19.6	115	32x4½P	32x4½P	1850
	Model A-18.....	1	4-3½x5	Continental.....	22.5	115	35x5	35x5	.....
	Model B-20.....	1½	4-4½x5½	Continental.....	27.2	130	36x6	36x6	.....
Highway-Knight.....	Highway Truck Corp., 100 W. Garfield Blvd., Chicago, Ill. Model A.....	4	4-4 x6	Sleeve-Valve.....	25.6	159	36x5	36x6D	.....
	Model B.....	5	4-4 x6	Sleeve-Valve.....	25.6	162	36x5	40x6D	.....
Hoover.....	Hoover Wagon Co., York, Pa. Model 15 B.....	¾	4-3½x5	Continental.....	19.6	120	32x4P	33x4½P	1625
	Model 20 A.....	1½	4-3½x5	Continental.....	19.6	132	34x4	33x5	2150
Huffman.....	Huffman Bros. Motor Co., Elkhart, Ind. Model C.....	1½	4-3½x5½	Buda.....	22.5	140	34x3½	34x6	1875
	Model B.....	1½	4-3½x5	Continental.....	22.5	140	34x3½	34x6	2075

Please mention The Automobile Trade Directory

COMPARISON

CHECK up the Collier Line, unit by unit, with other makes of high class trucks and you will quickly recognize the extraordinary value now offered by

COLLIER
TRUCKS

1 Ton, 1½ Ton, 2 Ton

Maximum value at minimum cost.
The Trucks to Sell and the Trucks to Buy.

Write for detailed information

THE
**COLLIER MOTOR
TRUCK COMPANY**

General Sales Office, 1747 Euclid Ave., CLEVELAND, OHIO
Factory, BELLEVUE, OHIO

Commerce
TRUCKS

Seventy per cent of the truck sales in the United States are made from the sizes specialized in by The Commerce Motor Car Company.

The Commerce line of trucks insures—

**SPEED IN DELIVERY
SPEED IN SALES
SATISFIED CUSTOMERS**

Built by a Manufacturer who for eleven years has been exclusively a motor truck manufacturer in ¾ to 2 Ton capacities.

THE COMMERCE MOTOR CAR CO.
Detroit, Mich.

Dependable

Red Seal
TRUCKS and TRACTORS



Dependable Red Seal Trucks are the result of years of intensive study and experimenting to overcome the faults common in ordinary trucks.

The one weak place in so many trucks is in the face of the gears—they are too thin and easily break under extra stress. Anticipating this weakness we equip every Dependable Red Seal Truck with "extra wide face gears" of hardened steel.

It is not possible to explain in this space all the interesting details concerning Dependable Red Seal Trucks—so we ask you to send for our complete story. Naturally you want a Dependable Truck. WRITE US TODAY.



Dependable Truck & Tractor Co.
Galesburg
Illinois

Another
FEDERAL

Selling truck-transportation has come to mean the sale of a dependable truck unit plus the assured responsibility and stability of the maker.

Are you selling such a truck?

You will find it in the Federal.

FEDERAL MOTOR
TRUCK COMPANY
Detroit Michigan



Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity Tons	No. of Cylinders and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Hurlburt	Harrisburg Mfg. & Boiler Co., 19th and Derry Sts., Harrisburg, Pa.								
	Model A	1½	4-4½x5½	Buda	25.6	148	34x4	34x5	\$2850
	Model B	2½	4-4½x5½	Buda	28.9	170	36x4	36x4	3750
	Model C	3½	4-4½x6	Buda	32.4	156	36x5	36x5D	4590
	Model D	5	4-4½x6	Buda	32.4	170	36x5	40x6D	5500
Independent	Independent Motor Co., 1636 Wilson Ave., Youngstown, Ohio					170			
	Model F	1½	4-3½x5	Continental	22.5	140	36x3½	36x5	2585
	Model H	2½	4-4½x5½	Continental	27.2	148	36x4	36x4D	3285
	Model K	3½	4-4½x5½	Continental	32.4	160	36x5	36x5D	4285
Independent	Independent Motor Truck Co., Second & Howell Sts., Davenport, Iowa.								
	Model B	1	4-3½x5	Continental	19.6	135	31x5	36x6	.....
	Model E	1½	4-3½x5	Continental	22.5	141	34x3½	34x5	.....
	Model H1	2½	4-4½x5½	Continental	27.2	156	36x4	36x7	.....
Indiana	Indiana Truck Corp., Marion, Ind.								
See page 53	Model 12	1½	4 3½x5½	Waukesha	22.5	134	34x3½	34x5	2290
	Model 20	2	4 4½x5½	Own	27.2	150	36x4	36x7	2950
	Model 25	2½	4 4½x5½	Own	27.2	156	36x4	36x8	3750
	Model 35	3½	4 4½x5½	Own	30.6	160	36x5	36x5 D	3150
	Model 51	5	4 5 x6½	Waukesha	40.0	170	36x5	40x6 D	4775
International	International Harvester Co., Harvester Bldg., Chicago, Ill.								
	Model S (Speed Truck)	¾	4-3½x5	Lycoming	19.6	124	34x5P	34 x5P	1850
	Model H	¾	4-3½x5½	Own	19.6	115	36x3½	36x3½	1850
	Model F	1	4-3½x5½	Own	19.6	128	36x3½	36x4	2050
	Model K	1½	4-3½x5½	Own	19.6	146	36x3½	36x5	2100
	Model G	2	4-4½x5	Own	28.9	146	36x4	36x6	2400
	Model L	3½	4-4½x5	Own	28.9	160	36x5	40x10	2850
	International Motor Co.—See Mack.					185			4750
Jackson	Jackson Motors Corp., Jackson, Mich. Model C	3½	4-4½x5½	Continental	32.4	150	36x7	36x7	4550
Jumbo	Nelson Motor Truck Co., 1206 S Jefferson Ave., Saginaw, Mich.								
	Model 15	1½	4-3½x5½	Buda	22.5	144	36x3½	36x5	2425
	Model 20	1½	4-3½x5½	Buda	22.5	144	36x5	38x7	2675
	Model 25	2½	4-4½x5½	Buda	28.9	152	36x4	36x7	3090
	Model 30	2½	4-4½x5½	Buda	28.9	152	36x4	42x9P	3590
	Model 35	3½	4-4½x6	Buda	32.4	165	36x5	36x10	4080
	Model 40	3½	4-4½x6	Buda	32.4	165	38x7P	44x10P	4730
Kalamazoo	Kalamazoo Motors Corp., Kalamazoo, Mich.								
	Model G1	1½	4-3½x5	Continental	22.5	144	34x4	35x5	2800
	Model G2	1½	4-3½x5	Continental	22.5	144	36x4	36x5	3100
	Model H	2½	4-4 x6	Wisconsin	25.6	160	36x4	36x8	3700
	Model K	3½	4-4½x6	Wisconsin	28.9	160	36x4	36x5D	4300
Kelly-Springfield	Harc's Motors, 10 W. 61st St., New York, New York								
	Model K 31	1½	4-3½x5½	Own	22.5	144	35x3½	36x6	2900
	Model K 34	1½	4-3½x5½	Own	22.5	144	35x3½	36x6	2900
	Model K 35	2½	4-3½x5½	Own	22.5	144	36x4	36x4D	3250
	Model K 36	2½	4-3½x5½	Own	22.5	144	36x4	36x4 D	3250
	Model K 40	3½	4-4½x6½	Own	32.4	150	36x5	40x5 D	4200
	Model K 41	3½	4-4½x6½	Own	32.4	156	36x5	40x5 D	4200
	Model K 42	3½	4-4½x6½	Own	32.4	156	36x5	40x5 D	4200
	Model K 45	4	4-4½x6½	Own	32.4	150	36x5	40x6	4550
	Model K 50	5	4-4½x6½	Own	32.4	150	36x6	40x6 D	4900
	Model K 60	6	4-4½x6½	Own	32.4	150	36x6	40x7 D	5100
	Kentucky Wagon Mfg. Co.—See Old Hickory.								

Please mention The Automobile Trade Directory

BUSINESS BUILDERS

FWD

The FWD Auto Co.
Dept. 120
Clintonville, Wis.
Canadian Factory
Kitchener, Ont.

TRUCKS

GARY

the 10-Test Truck

The Truck That Meets
Your Requirements

Five Models

Write

Gary Motor Truck Co.
GARY, IND.

Please mention The Automobile Trade Directory

INDIANA TRUCKS

The Highway Freighters

Definite reasons why you should represent the Indiana Truck Corporation—

1. Our 22 years of continuous manufacturing experience is your assurance of permanent and able assistance in furthering sales of INDIANA Trucks.
2. For ten years, in every known line of business, INDIANA Trucks have proved their supremacy.
3. The wide range of INDIANA models—1½-2-2½-3½-5 tons capacity—meet all requirements.

Write at once if you desire to become a member of our organization

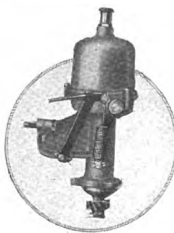
INDIANA TRUCK CORPORATION
(Founded 1898)
MARION, INDIANA

INDIANA TRUCKS

THE HIGHWAY FREIGHTERS

Capacities: 1½-2-2½-3½-5 Tons

The Clydesdale Controller



Makes Easy Sales of
CLYDESDALE
MOTOR TRUCKS

The marvelous BIG little device drives Clydesdale Trucks at a uniform speed uphill and down and over any kind of a road.

And the driver doesn't need to do a thing but steer!

The Clydesdale controller not only saves gas—it saves wear and tear on vital parts, it saves the driver's temper and the owner's pocketbook.

Write for our interesting dealer proposition

The Clydesdale Motor Truck Company
Clyde, Ohio, U.S.A.

CLYDESDALE

MOTOR TRUCKS

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capac- ity, Tons	No. of Cylin- ders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Keystone.....	Keystone Motor Truck Corp., 42nd & Chestnut Sts., Philadelphia, Pa. Model 40.....	2	4-3½x5½	Buda.....	22.5	144	34x5	38x7P	\$2450
Kimball.....	Kimball Motor Truck Co., 1700 E. Ninth St., Los Angeles, Cal. Model AB.....	2	4-4 x8	Wisconsin.....	25.6	Opt.	36x4	36x7	3675
	Model AC.....	2½	4-4½x6	Wisconsin.....	28.9	Opt.	36x4	36x8	3975
	Model AD.....	3	4-4½x6	Wisconsin.....	32.4	Opt.	36x4	36x10	4400
	Model AE.....	4	4-4½x6	Wisconsin.....	36.1	Opt.	36x5	40x12	4975
	Model AF.....	5	4-5 x8	Wisconsin.....	40.0	Opt.	36x6	40x7D	5975
Kissel.....	Kissel Motor Car Co., Hartford, Wis. 1-Ton Express.....	1	4-3½x5½	Own.....	24.0	140	34x5	34x5	1585
	Model Gen. Utility.....	1½	4-3½x5½	Own.....	24.0	152	36x3	36x5	2775
	Model Freight.....	2½	4-4½x5½	Own.....	28.9	168	36x4	36x7	3475
	Model Heavy Duty.....	4	4-4½x5½	Own.....	28.9	168	36x5	36x5D	4475
	Model Goliath.....	5	4-4½x5½	Own.....	28.9	180	36x6	36x6D	5085
Kleiber.....	Kleiber Motor Truck Co., 11th & Folsom Sts., San Francisco, Cal. Model AA.....	1	4-4½x5½	Continental.....	27.2	130	34x3	34x5	
	Model A.....	1½	4-4½x5½	Continental.....	27.2	143	36x3	36x6	
	Model BB.....	2	4-4½x5½	Continental.....	27.2	153	36x4	36x7	
	Model B.....	2½	4-4½x5½	Continental.....	32.4	160	36x5	36x8	
	Model C.....	3½	4-4½x5½	Continental.....	32.4	173	36x5	36x10	
	Model D.....	5	4-5½x5½	Continental.....	44.1	180	36x6	40x6D	
Knox.....	Knor Motors Associates, Springfield, Mass. Model 35.....	5	4-5 x5½	Own.....	40.0	108	36x4	38x6D	6000
	Model 36.....	5	4-5 x5½	Own.....	40.0	108	36x4	38x6D	6500
Koehler.....	Koehler Motors Corp., H. J., Llewellyn Ave., Bloomfield, N. J. Model C.....	1½	4-3½x5	Herschell-Spill.....	19.6	132	34x3	34x5	1985
	Model M.....	2½	4-4 x5½	Hercules.....	25.6	162	36x4	36x7	3365
	Model M. T.....	5	4-4 x5½	Hercules.....	25.6	129	36x4	36x4	3450
L. M. C.....	Louisiana Motor Car Co., Shreveport, La. Model 2-20.....	2½	4-4½x5½	Continental.....	27.2	164	36x4	36x4 D	2540
	La France Truck Co.—See Ward La France.								
Lange.....	Lange Motor Truck Co., Fifth & Hamilton Aves., Pittsburgh, Pa. Model B.....	2½	4-4½x5½	Continental.....	27.2	136	36x4	38x6	3000
Larrabee.....	Larrabee-Devo Motor Truck Co., Bing- hamton, N. Y. Model U.....	1½	4-4½x5	Continental.....	22.5	138	34x3½	34x5	2400
See page 49	Model K.....	2½	4-4½x5½	Continental.....	27.2	158	36x4	36x7	3400
	Model L.....	3½	4-4½x5½	Continental.....	32.4	160	36x5	36x5D	4200
	Model W.....	5	4-4½x6	Continental.....	36.1	185	36x5	40x6D	5100
	Lewis-Hall Motors Corp.—See Hall.								
	Louisiana Motor Car Co.—See L. M. C.								
Luedinghaus Quality See page 41	Luedinghaus Quality Motor Trucks, Broad- way, Howard to Mound Sts., St. Louis, Mo. Model K.....	2	4-4½x5½	Waukesha.....	28.9	145	36x4 36x7P	36x7 40x8P	..... .....
	Model K-LS.....	2	4-4½x5½	Waukesha.....	28.9	170	36x4 36x6P	36x7 40x8P	..... .....
	Model W.....	1½	4-3½x5½	Waukesha.....	144		34x4	34x5	.....
	Model C.....	1	4-3½x5	Herschell-Spill.....	130		35x5P	35x5P	.....
Luverne.....	Luverne Automobile Co., Maple & Mc- Kenzie Sts., Luverne, Minn. Model.....	2	4-3½x4½	G. B. & S.....	22.5	150	34x4	34x5	1900
	Model.....	3	6-3½x5½	Continental.....	29.4	136	36x6P	38x7P	2500
Maccar.....	Maccar Truck Co., Gilligan St., Scranton, Pa. Model L.....	1½	4-4½x5½	Continental.....	27.2	150	36x4	36x6	2925
	Model H.....	2½	4-4½x5½	Continental.....	32.4	162	36x4	36x4 D	3750
	Model M2.....	3½	4-4½x6	Wisconsin.....	32.4	174	36x5	36x5 D	4500
	Model G.....	5	4-4½x6	Continental.....	36.1	186	36x5	40x6 D	5500

Please mention The Automobile Trade Directory



General Motors Truck

GMC Trucks are as dependable as their maker, the General Motors Truck Company, a unit of the General Motors Corporation, the strongest organization in the automotive industry.

General Motors Truck Co.
Pontiac, Mich.

(594)

EVERY
Acason
**IS A
GOOD
TRUCK**

A motor truck cannot be too good. Acason prices represent the cost of the best in **POWER** and **ABILITY**, plus a reasonable profit, and have no relation to the prices of any other make of machines.

Acason Motor Truck Co.

431 Brooklyn

Detroit, Mich.

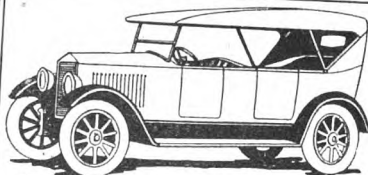
Exclusively Truck Builders

DENBY MOTOR TRUCKS

**A BETTER—
TRUCK
SERVICE
DEALER PROPOSITION
CO-OPERATION**

—**THAN THE OTHERS**
—**WHY?**
—**WE WILL TELL YOU**
—**WRITE**

DETROIT



PARENTI

IT IS VITALLY DIFFERENT
These features make the Parenti Car the long looked for **ECONOMY CAR**.

LIGHT WEIGHT

Body constructed of plywood—luxurious five-passenger car of 123-inch wheel base weighs only 1500 lbs.

UNSPRUNG WEIGHT ELIMINATED

No heavy steel frame or axles—differential gears and housing carried above springs.

MOTOR

Own 3 by 4½, six-cylinder unit power plant—35 H. P. The Parenti will give 30 to 40 miles per gallon of gasoline and 20 thousand to 25 thousand miles per set of tires.

Literature upon request

Manufactured by

PARENTI MOTORS CORPORATION
BUFFALO, NEW YORK

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Mack	International Motor Co., 252 W. 64th St., New York, N. Y.								
		Model AB (Chain).....	1½	4-4 x5	Own	25.6	144 162	36x4 36x3½D	\$3000
		Model AB (Chain).....	2	4-4 x5	Own	25.6	144 162	36x4 36x4 D	3300
		Model AB (Dual Red.)..	1½	4-4 x5	Own	25.6	144 162	36x4 36x3½	3450
		Model AB (Dual Red.)..	2	4-4 x5	Own	25.6	144 162	36x4 36x4	3750
		Model AC.....	3½	4-5 x6	Own	40.0	156 180	36x5 40x5 D	4950
		Model AC.....	5	4-5 x6	Own	40.0	156 180	36x6 40x6 D	5500
		Model AC.....	6½	4-5 x6	Own	40.0	156 180	36x6 40x12	5750
Marvin	Marvin Truck Corp., 501 Bronson St., Kenosha, Wis.	Model 430.....	1½	4-3½x5	Wisconsin	22.5	132	32x4	.....
		Model 450.....	2½	4-4 x5	Wisconsin	25.6	150	34x5 36x6	.....
Master	Master Trucks, 3132-36 Wabash Ave., Chicago, Ill.								
		Model JW.....	1½	4-4½x5½	Buda	27.2	142	34x3½ 34x5	2690
		Model D.....	2½	4-4½x5½	Buda	28.9	144	34x4 36x7	3540
		Model W.....	2½	4-4½x5½	Buda	28.9	144	34x4 36x7	3290
		Model WL.....	2½	4-4½x5½	Buda	28.9	170	34x4 36x7	3390
		Model DL.....	2½	4-4½x5½	Buda	28.9	170	34x4 36x7	3640
		Model A.....	3½	4-4½x6	Buda	32.4	158	35x5 40x5 D	4190
		Model AL.....	3½	4-4½x6	Buda	32.4	194	35x5 40x5 D	4290
		Model E.....	3½	4-4½x6	Buda	32.4	194	35x5 40x5 D	4640
		Model EL.....	3½	4-4½x6	Buda	32.4	194	35x5 40x5 D	4740
		Model B.....	5	4-4½x6½	Buda	36.1	170	36x6 40x6 D	5290
		Model BL.....	5	4-4½x6½	Buda	36.1	194	36x6 40x6 D	5390
		Model F.....	5	4-4½x6½	Buda	36.1	170	36x6 40x6 D	5440
		Model FL.....	5	4-4½x6½	Buda	36.1	194	36x6 40x6 D	5540
Maxwell	Maxwell Motor Sales Corp., Detroit, Mich. See page 33	Model 1920.....	1½	4-3½x4½	Own	21 0	124	35x5P 35x5P	1495
Menominee	Manominee Motor Truck Co., Broadway & Michigan St., Clintonville, Wis.	Model H. T.....	1	4-3½x5	Wisconsin	22.5	130	34x3½ 36x5	2080
		Model H.....	1½	4-4 x5	Wisconsin	25.6	144	36x3½ 36x5	2725
		Model D.....	2	4-4 x6	Wisconsin	25.6	160	36x4 36x4D	3245
		Model G.....	4	4-4½x6	Wisconsin	32.4	180	36x5 36x5D	4270
		Model J.....	5	4-4½x6	Wisconsin	36.1	180	36x6 40x6 D	5450
Moreland	Moreland Motor Truck Co., 1701 N. Main St., Los Angeles, Cal.	Model 21 N.....	1	4-3½x5	Continental	22.5	132	35x5P 36x6P	2850
		Model 21 B.....	1½	4-4½x5½	Continental	27.2	126	36x3½ 36x6	3125
		Model 21 C.....	2½	4-4½x5½	Continental	32.4	160	36x4 36x8	3900
		Model 21 G.....	3½	4-4½x6	Continental	36.1	174	36x5 40x5D	4975
		Model 21 J.....	5	4-4½x6	Continental	36.1	188	36x6 40x6	5350
Mutual	Mutual Truck Co., Sullivan, Ind.								
		Model 2A.....	2	4-4x6	Wisconsin	25.6	152	36x4 36x8	3450
		Model 2 A. P.....	2½	4-4x6	Wisconsin	25.6	152	38x7P 42x9P	4150

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires		Price.
							Front	Rear	
Napoleon..... See page 41	Napoleon Motors Co., Traverse City, Mich. Model 9..... Model 11..... Model 7 (Speed Truck).....	1 1½ ¾	4-3½x5 4-3½x5 4-3½x5	Gray (Victory).. Gray (Victory).. Herschell-Spill..	19.6 19.6 19.6	133 133 129	35x5P 35x5 33x4P	35x5P 36x6 34x4	\$1535 1860
Nash.....	Nash Motors Co., Kenosha, Wis. Model 2018..... Model 3018..... Model 4018 (Quad).....	1 3 3	4-3½x5½ 4-3½x5½ 4-4½x5½	Own..... Own..... Buda.....	22.5 22.5 28.9	130 144 124	34x3 34x4 36x5	34x4 34x6 36x5	..... ..... .....
Nelson - LaMoon	Nelson Motor Truck Co.—See Jumbo Nelson - LaMoon, 849-85 N. Kedzie Ave., Chicago, Ill. Model F1½..... Model F2½..... Model F3½..... Model F8.....	1½ 2½ 3½ 5	4-4½x5½ 4-4½x5½ 4-4½x5½ 4-4½x6	Continental..... Continental..... Continental..... Continental.....	27.2 27.3 32.4 36.1	Opt. Opt. Opt. Opt.	36x3½ 36x4 36x5 36x6	36x6 36x7 36x5D 40x6D	..... ..... ..... .....
New England Truck Co.—See Netco.	New England Truck Co., 86 Luxemburg St., Fitchburg, Mass. Model D..... Model H.....	2 2½	4-4½x5½ 4-4½x5½	Continental..... Continental.....	27.2 32.4	144 168 168	36x4 36x4	36x7 36x8	..... .....
New York.....	Tegtmeyer & Riepe Co., 771-73 First Ave., New York, N. Y. Model M..... Model N.....	1½ 2½	4-4½x5½ 4-4½x5½	Continental..... Continental.....	27.2 27.2	144 144 162	36x3½ 36x4	36x5 36x4 D	..... .....
Noble.....	Noble Motor Truck Corp., 8. Main St., Kendallville, Ind. Model A-31..... Model B30..... Model 40..... Model D86..... Model E70.....	1 1½ 2 2½ 3½	4-3½x5 4-3½x5½ 4-4x5½ 4-4½x5½ 4-4½x6	Lycoming..... Buda..... Buda..... Buda..... Buda.....	19.6 22.5 25.6 28.9 32.4	130 156 148 160 162 176 182 196	34x4½ 36x3½ 36x4 36x4 36x5 36x5 36x5	35x5 36x5 36x7 36x8 36x10	..... ..... ..... ..... .....
Northway.....	Northway Motors Corp., 1 Beacon St., Boston, Mass. Model B2..... Model B3.....	2 3½	4-4 x6 4-4 x6	Own..... Own.....	25.6 25.6	146 161 178 185	36x4 36x5	36x8 40x10	..... .....
Northwestern.....	Star Carriage Co., 2401 First Ave., S. Seattle, Wash. Model W..... Model W. S.....	2 2½	4-4½x5½ 4-4½x5½	Continental..... Continental.....	27.2 32.4	164 164	34x4 34x4	36x7 36x7	3300
Norwalk.....	Norwalk Motor Car Co., Martinsburg, W. Va. Model 25 E..... Model 35 E..... Model 35E (Special).....	1 1½ 1½	4-3½x5 4-3½x5 4-3½x5½	Lycoming..... Lycoming..... Buda.....	19.6 19.6 22.5	130 143 143	34x4P 34x3½ 34x3½	34x4 34x5 34x5	1695 2025 2285
Ok.....	Oklahoma Auto Mfg. Co., Okla., Okla. Model H I..... Model K I..... Model L I..... Model M I.....	1½ 1½ 2½ 3½	4-3½x5½ 4-3½x5½ 4-4½x5½ 4-4½x6	Buda..... Buda..... Buda..... Buda.....	22.5 22.5 28.9 32.4	150 150 150 160	36x6 36x3½ 36x4 36x5	36x6 36x5 36x8 36x5	2675 2675 3450 4250
Old Hickory.....	Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky. Model W.....	1	4-3½x5	Continental.....	22.5	135	36x6P 36x3½	36x6P 36x4	..... .....
Old Reliable.....	Old Reliable Motor Truck Corp., 3921 S. Michigan Ave., Chicago, Ill. Model B..... Model C..... Model D..... Model K..... Model M.....	2½ 3½ 5 7 7	4-4½x6 4-4½x6 4-4½x6 4-5 x6½ 4-5 x6½	Wisconsin..... Wisconsin..... Wisconsin..... Waukesha..... Waukesha.....	28.9 28.9 36.1 40.0 40.0	160 168 180 136 124	34x4 36x5 36x6 36x6 36x6	36x4D 36x5D 40x6D 40x7D 40x7D	3500 4250 5250 6250 6250
Old Motor Works, Lansing, Mich. Model T.....	Old Motor Works, Lansing, Mich. Model T.....	1	4-3½x5½	Own.....	21.7	128	35x5P 35x5P	35x5P 35x5P	1500

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Oneida.....	Oneida Motor Truck Co., Webster & Willow Sts., Green Bay, Wis.								
	Model A 9.....	1½	4-3½x½	Owens.....	22.5	135	36x3½	36x5	\$2350
	Model B 9.....	1½	4-4x½	Owens.....	25.2	144	36x3½	36x6	2915
	Model C 9.....	2½	4-4x½	Owens.....	25.2	160	36x4	36x7D	3390
	Model D 9.....	3½	4-4½x½	Owens.....	32.4	170	36x5	36x10	4345
	Model E 9.....	5	4-4½x½	Owens.....	32.4	180	36x6	40x12	5460
Oshkosh.....	Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.								
	Model A.....	2½	4-3½x5	Herschell-Spill.....	25.6	130	36x6P	36x6P	
	Model AA.....	2½	4-3½x5	Herschell-Spill.....	19.6	165	36x6P	36x6P	
Overland See page 25	Willys-Overland, Inc., Toledo, Ohio								
	Model (Panel)..... lbs.	800	4-3½x5	Owens.....	18.2	104	31x4P	31x4P	
	Model (Express) Delivery Wagon lbs.	800	4-3½x5	Owens.....	18.2	104	31x4P	31x4P	
	Model (Express)..... lbs.	1200	4-4½x4½	Owens.....	27.2	106	33x4P	33x4P	
Packard.....	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich.								
	Model EC.....		4-4½x5½	Owens.....	28.1	144	36x3½	36x6	3700
	Model ED.....		4-4½x5½	Owens.....	32.4	156	36x5	36x5D	4450
	Model EF.....		4-5 x5½	Owens.....	40.0	156	36x6	40x6D	5550
	Model EX.....		4-4½x5½	Owens.....	28.1	144	36x6P	38x7P	4200
	Model EY.....		4-5 x5½	Owens.....	40.0	156	38x7P	44x10P	6050
Paige.....	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich.								
	Model 52-19.....	1½	4-4x½	Hinkley.....	25.6	140	34x3½	34x5	2880
	Model 54-20.....	2½	4-4½x5½	Hinkley.....	28.9	150	34x4	34x8	3400
	Model 51-18.....	3½	4-4½x5½	Hinkley.....	32.4	160	36x5	36x5D	4285
Parker.....	Parker Motor Truck Co., 608 Linus St., Milwaukee, Wis.								
	Model F-20.....	2	4-4x6	Wisconsin.....	25.6	150	34x4	36x4	3500
	Model G-21.....	2½	4-4½x6	Wisconsin.....	28.9	120	36x6P	42x9P	
	Model J-20.....	3½	4-4½x6	Wisconsin.....	32.4	160	36x5	40x5D	4400
	Model M-20.....	5	4-4½x6	Wisconsin.....	36.1	160	36x6	40x6D	5500
Patriot.....	Patriot Motors Co., Lincoln, Neb.								
	Model Revere.....	¾	4-3½x5	Continental.....	22.5	128	35x5P	35x5P	
	Model Lincoln.....	1½	4-4 x5½	Hinkley.....	25.6	140	34x3½	36x3½	
	Model Washington.....	2½	4-4½x5½	Hinkley.....	32.4	156	36x7	36x7	
Piedmont.....	Piedmont Motor Car Co., Lynchburg, Va.								
	Model 4-35.....	1½	4-3½x5	Lyeomings.....	19.6	128	34x4P	34x4	1785
Pierce-Arrow.....	Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y.								
	Model 2.....	2	4-4 x5½	Owens.....	25.6	150	36x4	36x4	3750
	Model 3½.....	3½	4-4½x6½	Owens.....	32.4	162	36x5	36x5D	4950
	Model 8.....	6	4-4½x6½	Owens.....	32.4	168	36x5	40x6D	5700
Power.....	Power Truck & Tractor Co., Beard & Goldsmith Aves., Detroit, Mich.								
	Model C.....	3½	4-4½x5½	Hinkley.....	32.4	168	36x5	36x10	4300
Rainier.....	Rainier Motor Corp., Bay Side Ave. & L. I. R. R., Flushing, N. Y.								
	Model R-11.....	¾	4-3½x5	Continental.....	19.6	125	35x5	35x5P	2150
	Model R-12.....	1	4-3½x5	Continental.....	19.6	133	34x3½	32x4	2350
	Model R-16.....	1½	4-3½x5	Continental.....	22.5	147	34x3½	34x5	2600
	Model R-18.....	2	4-4½x5	Continental.....	27.2	147	34x4	34x6	2950
	Model R-20.....	2½	4-4½x5½	Continental.....	27.2	165	34x4	34x7	3600
	Model R-15.....	3½	4-4½x5½	Continental.....	32.4	170	36x5	36x5	4500
	Model R-17.....	5	4-4½x6	Continental.....	36.1	175	36x6	36x6D	5250
	Italston Iron Works.—See Hewitt-Ludlow.								
	Reliance Motor Truck Co., Eighth St. & Pierce Ave., Appleton, Wis.								
Reliance.....	Model A-10.....	1½	4-4 x5	Buda.....	25.6	160	36x3½	36x5	
	Model B-20.....	2½	4-4½x5½	Buda.....	28.9	166	36x4	38x4D	
Reo..... See page 23	Reo Motor Car Co., Lansing, Mich.								
	Model (Speed Wagon)..... lbs.	1500	4-4½x4½	Owens.....	27.2	128	34x4P	34x4P	1385

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Republic	Republic Motor Truck Co., 933 Michigan Ave., Alma, Mich.								
	Model 10E	1	4-3½x5	Continental	22.5	124	35x5P	35x5P	\$1995
	Model 11X	1½	4-3½x5	Continental	22.5	144	34x5½	34x5½	2295
	Model 19	2½	4-4½x5½	Continental	27.2	144	36x4	36x7	2795
	Model 19W	2½	4-4 x5½	Waukegan	25.6	154	36x4	36x7	2795
	Model 20	3½	4-4½x5½	Continental	32.4	165	36x5	36x10	3845
Ribar	Hare's Motors, 16 W. 61st St., New York, N. Y.								
	Model B	3	4-4½x6	Own	28.9	150	36x5	36x5 D	4600
						170			4600
						190			4700
	Model BB	4	4-4½x6	Own	28.9	170	36x5	36x5 D	4750
						190			4800
Rock Falls	Rock Falls Mfg. Co., Sterling, Ill.								
	Model 11	2600	6-3½x5	Continental	33.5	150	35x5	35x5D	.....
Rowe	Rowe Motor Mfg. Co., Lancaster, Pa.								
	Model CW	1½	4-3½x5	Wisconsin	22.6	133	36x6P	36x6P	.....
	Model CDW	2	4-4 x5	Wisconsin	25.6	140	34x4	36x3D	.....
	Model HW	4	4-4½x6	Wisconsin	28.9	158	36x5	36x5D	.....
	Model FW	5	4-4½x6	Wisconsin	32.4	170	36x6	40x6D	.....
	Model GPW	3	4-3½x5	Model	32.8	170	38x7P	42x9P	.....
	Model GSW	3	4-4 x6	Wisconsin	25.6	168	34x5	36x5 D	.....
Samson	Samson Tractor Co., Industrial Ave., Janesville, Wis.								
	Model 15	3½	4-3½x4	Own	21.7	118	32x4	32x4	995
	Model 25	1½	4-3½x5½	Own	118	118	35x5	35x5	1395
Sandow	Sandow Motor Truck Co., 3333 W. Grand Ave., Chicago, Ill.								
	Model C	1	4-3½x5	Continental	19.6	120	34x3½	34x5	2290
	Model C G	1½	4-3½x5	Continental	22.5	135	34x4	34x6	2590
	Model J	2½	4-3½x5	Continental	22.5	160	36x4	36x5	2690
	Model J	2½	4-4½x5½	Continental	27.2	165	36x4	36x7	3275
	Model L M	3½	4-4½x5½	Continental	32.4	175	36x5	36x5D	429½
	Model L	5	4-4½x5½	Continental	32.4	175	36x6	40x6D	4890
Sanford	Sanford Motor Truck Co., Syracuse, N. Y.								
See page 41	Model W25	2½	4-4½x5½	Continental	27.2	174	36x4	36x4	3350
	Model W35	3½	4-4½x5½	Continental	32.4	174	36x5	36x5D	4200
	Model W25	5	4-4½x5½	Continental	32.4	174	36x5	40x6D	5100
Schacht	Schacht Motor Truck Co., G. A., Eighth & Evans Sts., Cincinnati, Ohio.								
	Model	2	4-4½x5½	Buda	28.9	168	36x4	36x7	3550
	Model	2½	4-4½x5½	Buda	28.9	168	36x4	36x4D	3850
	Model	3½	4-4½x6	Buda	28.9	168	36x5	36x5D	4350
	Model	5	4-4½x6	Buda	32.4	168	36x5	40x6D	5350
Schwartz	Schwartz Motor Truck Corp., Reading, Pa.								
See page 49	Model A	1	4-3½x5	Lycoming	19.6	130	34x4½	34x4½	1585
	Model B	1½	4-3½x5½	Buda	22.5	146	34x3½	34x6	2600
	Model CW	2½	4-4½x5½	Buda	28.9	150	36x4	34x8	3200
	Model DW	6	4-4½x6	Buda	32.4	170	36x6	40x12	4900
Selden	Selden Truck Corp., Rochester, N. Y.								
	Model	1½-A	4-4½x5	Continental	22.5	137½	34x3½	34x5	2360
	Model	2½-A	4-4½x5½	Continental	27.2	145	36x4	36x7	3425
	Model	3½-A	4-4½x5½	Continental	32.4	162	36x5	36x10	4175
	Model	5-A	4-4½x6	Continental	36.1	164	36x6	40x12	5600
Seneca	Seneca Motor Car Co., Dept 124, Fostoria, Ohio								
See page 27	Model M	3½	4-3½x4½	LeRoi	15.6	108	30x3½P	30x3½P	1160
Service	Service Motor Truck Co., Grand St., Wabash, Ind.								
	Model 15	3½	4-3½x5	Mid-West	21.0	137	34x3½P	35x5P	1840
	Model 220	1	4-3½x5	Buda	19.6	137	34x3½	34x5	2415
	Model 31	1½	4-4x5½	Buda	25.6	150	36x3½	36x6	2985
	Model 36	1½	4-4½x5½	Buda	28.9	150	35x5P	38x7P	3415
	Model 51	2½	4-4½x5½	Buda	32.4	171	36x5	36x5D	4485
	Model 76	3½	4-4½x5½	Buda	28.9	171	36x5	36x5D	4285
	Model 71	3½	4-4½x5½	Buda	32.4	171	36x6	36x6D	5275
	Model 101	5	4-4½x6	Buda	32.4	171	36x6	36x6D	5275

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Signal.....	Signal Motor Truck Co., Charlevoix Ave. & Connors Rd., Detroit, Mich.	1	4-3½x5	Continental.....	22.5	132	34x5P	36x6P	\$ 2475
	Model N. F.....	1½	4-4½x5½	Continental.....	27.2	144	34x4	36x6	2925
	Model J.....	2½	4-4½x5½	Continental.....	27.2	150	34x4	36x8	3275
	Model J. L.....	2½	4-4½x5½	Continental.....	27.2	180	34x4	36x8	3350
	Model M.....	3½	4-4½x5½	Continental.....	32.4	168	36x5	40x5D	4275
	Model M. L.....	3½	4-4½x5½	Continental.....	32.4	204	36x5	40x5D	4375
	Model R.....	5	4-4½x6	Continental.....	36.1	180	36x6	40x6	5300
Southern.....	Southern Truck & Car Corp., Greensboro, N. C.	1	4-3½x5	Buda.....	19.6	130	34x3½	34x4	2090
	Model 10.....	1½	4-3½x5	Continental.....	22.5	144	34x3½	34x5	2990
	Model 15.....	2	4-4½x4½	Buda.....	28.9	150	36x4	36x7	2990
Standard.....	Standard Motor Truck Co., 1111 Belle- vue Ave., Detroit, Mich.	1	4-3½x5	Continental.....	22.5	134	36x6P	36x6P	2600
	Model 1K.....	2½	4-4½x5½	Continental.....	27.2	140	36x4	36x7	3100
	Model 76.....	3½	4-4½x5½	Continental.....	32.4	160	36x5	36x10	4000
	Model 66.....	5	4-4½x6	Continental.....	36.1	164	36x6	40x12	5250
	Model 5K.....								
	Star Carriage Co.—See Northwestern.								
Sterling.....	Sterling Motor Truck Co., 46th Ave. & Rogers St. (W. Allis), Milwaukee, Wis.	1½	4-4x5½	Own.....	25.6	142	36x3½	36x5	3200
	Model.....	2	4-4x5½	Own.....	25.6	142	36x4	36x6	3500
	Model.....	2½	4-4½x5½	Own.....	30.6	156	36x4	36x4D	3650
	Model.....	3½	4-4½x6½	Own.....	32.4	162	36x5	40x5D	4650
	Model (Worm).....	5	4-5x6½	Own.....	40.0	168	36x6	40x6D	5500
	Model (Chain).....	5	4-5x6½	Own.....	40.0	174	36x6	40x6D	6000
	Model (Chain).....	7½	4-5x6½	Own.....	40.0	174	36x6	40x7D	6500
Stewart.....	Stewart Motor Corp., Buffalo, N. Y.	¾	4-3½x4½	LaRoi.....	15.6	110	32x4P	32x4P	1350
See page 41	Model 11.....	1	4-3½x5	Herschell-Spill.....	19.6	130	35x5	35x5	1750
	Model 12.....	2	4-4½x5½	Continental.....	27.2	156	34x4	34x7	2800
	Model 7x.....	2½	4-4½x5½	Buda.....	28.9	156	34x4	34x7	2950
	Model 9.....	1½	4-3½x5	Continental.....	22.5	140	34x3½	34x5	2200
	Model 10.....	3½	4-4½x5½	Continental.....	32.4	165	36x5	36x5D	3850
	Model 10x.....	3½	4-4½x6	Buda.....	32.4	165	36x5	36x5D	3850
Stoughton.....	Stoughton Wagon Co., Stoughton, Wis.	1	4-3½x5½	Waukesha.....	22.5	130	34x4½	35x5	1995
	Model A.....	1½	4-3½x5½	Waukesha.....	22.5	140	36x3½	36x5	2350
	Model B.....	2	4-4 x5½	Waukesha.....	25.6	140	36x4	36x7	2000
	Model D.....	3	4-4½x5½	Waukesha.....	28.9	155	36x5	36x5D	3600
Sullivan.....	Sullivan Motor Truck Corp., Rochester, N. Y.	2	4-4½x5½	Buda.....	28.9	150	36x4	36x6	3350
See page 45	Model E.....	3½	4-4½x6	Buda.....	32.4	170	36x5	36x5D	4650
Super.....	O'Connell Motor Truck Co., Waukegan, Ill.	2	4-3½x5½	Waukesha.....	22.5	156	36x4	36x7	.....
	Model 40.....	2½	4-4 x6	Wisconsin.....	25.6	156	36x4	36x8	.....
	Model 50.....	3½	4-4½x6	Wisconsin.....	28.9	164	36x5	40x5	.....
	Model 70.....	5	4-4½x6	Wisconsin.....	36.1	164	36x5	40x6D	.....
Superior.....	Superior Motor Truck Co., 22 Stewart Ave., Atlanta, Ga.	1	4-3½x5	Continental.....	22.5	124	34x4½P	34x4	1800
	Model D.....	2	4-4½x5½	Continental.....	27.2	144	36x4	36x6	2750
	Model E.....								
	Tegetmeier & Riepe Co.—See New York.								
T.C.W.D.....	Iwin City Four Wheel Drive Co., 2482-96 University Ave., St. Paul, Minn.	3½	4-5½x6	Wisconsin.....	42.0	140	36x6	36x6	4750
	Model B.....	5	4-5½x6½	Wisconsin.....	42.0	140	36x7	36x7	5250
	Model A.....								
	Thomart Motor Co.—See Akron-Multi.								

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, lbs.	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Tiffin.....	Tiffin Wagon Co., Harrison St., Tiffin, Ohio.								
	Model F. 15.....	1½	4-4½x8½	Continental.....	27.2	135	36x3½	36x5	.....
	Model F. 25.....	2½	4-4½x8½	Continental.....	27.2	148	36x4	36x3½D	.....
	Model F. 35.....	3½	4-4½x8½	Continental.....	32.4	160	36x5	40x6D	.....
	Model F. 50.....	5	4-4½x8	Continental.....	36.1	168	36x6	40x6D	.....
	Model F. 60.....	6	4-4½x8	Continental.....	39.1	168	36x6	40x12	.....
Titan.....	Titan Truck Co., Milwaukee, Wis.								
See page 45	Model.....	2½	4-4½x5½	Buda.....	28.9	156	34x4	36x4	\$3400
	Model.....	3½	4-4½x6	Buda.....	32.4	162	36x5	40x5D	4550
	Model.....	5-6	4-4½x6	Buda.....	32.4	156	36x5	40x6D	5400
Tower.....	Tower Motor Truck Co., W. Grove St., Greenville, Mich.								
	Model J.....	1½	4-4½x8½	Continental.....	27.2	142	35x5P	38x7	3000
	Model H.....	2½	4-4½x8½	Continental.....	27.2	146	36x4	38x7	3475
	Model G.....	3½	4-4½x8½	Continental.....	32.4	165	36x5	38x10	4400
Traffic.....	Traffic Motor Truck Corp., St. Louis, Mo.								
See page 45	Model C.....	2	4-3½x5	Continental.....	22.5	133	34x3½	34x5	1595
Transport.....	Transport Truck Co., Mt. Pleasant, Mich.								
See page 45	Model 20.....	1	4-3½x5½	Buda.....	22.5	130	34x3½	34x4	1850
	Model 30.....	1½	4-3½x5	Continental.....	22.5	140	36x3½	36x5	2250
	Model 50.....	2	4-4½x5½	Buda.....	28.9	150	36x4	36x7	2785
	Model 70.....	3½	4-4½x6	Buda.....	32.4	170	36x5	36x10	4195
Traylor.....	Traylor Engineering & Mfg. Co., (Truck & Traction Div.), Cornwells, Pa.								
	Model B.....	1½	4-3½x8½	Buda.....	22.6	132	34x3½	34x6	2500
	Model C.....	2	4-4 x8½	Buda.....	25.0	138	36x4	38x7	3000
	Model D.....	3	4-4½x8½	Buda.....	28.0	150	36x4	38x8	3500
	Model E.....	4	4-4½x8	Buda.....	32.4	170	36x5	40x5D	4700
	Model F.....	5	4-4½x8	Buda.....	32.4	170	36x5	40x6D	5100
Triangle.....	Triangle Motor Truck Co., St. Johns, Mich.								
See page 46	Model AA.....	¾	4-3½x5	Herschell-Spill.....	16.9	115	35x5P	35x5P	1650
	Model A.....	1½	4-3½x5½	Waukeasha.....	22.5	144	34x3½	34x6	2350
	Model B.....	2½	4-4x5½	Waukeasha.....	25.6	151	36x4	36x7	2950
	Model C.....	4	4-3½x5½	Waukeasha.....	22.5	147	36x4	36x6	2700
Triumph.....	Triumph Truck & Tractor Co., 110-16 Southwest Blvd., Kansas City, Mo.								
	Model H B.....	2	4-3½x8½	Buda.....	22.5	144	36x3½	36x5	.....
	Model H.....	1½	4-3½x8½	Buda.....	22.5	144	36x4	36x7	.....
	Model HC.....	1½	4-3½x8½	Buda.....	22.5	144	36x3½	36x5	.....
	United Four Wheel Drive Truck Corp.—See Allfour.								
U.S.....	United States Motor Truck Co., 17th St. & Madison Ave., Covington, Ky.								
	Model N.....	1½	4-3½x5	Continental.....	22.5	144	36x3½	36x5	.....
	Model R.....	2½	4-4x5½	Hinkley.....	25.0	156	34x4	36x8	.....
	Model S.....	3½	4-4½x8½	Hinkley.....	32.4	168	36x5	36x10	.....
	Model T.....	5	4-4½x8½	Hinkley.....	36.1	172	36x6	40x12	.....
Ultimate.....	Ultimate Motor Co., 407-09 Elizabeth Ave., Newark, N. J.								
	Model A.....	2	4-4 x8½	Buda.....	25.0	156	36x3	36x6	.....
	Model AJ.....	2	4-4 x8½	Buda.....	25.0	140	35x5P	38x7P	.....
	Model B.....	3	4-4½x5½	Buda.....	28.9	164	36x4	36x8	.....
	Model BL.....	3	4-4½x5½	Buda.....	28.9	178	36x4	36x8	.....
Union.....	Union Motor Truck Co., Bay City, Mich.								
See page 47	Model H.....	2½	4-4 x6	Wisconsin.....	25.6	152	36x5	36x8	3490
	Model H.....	4	4-4½x8½	Wisconsin.....	32.4	171	36x6	36x10	4485
	Model J.....	6	4-5 x6	Wisconsin.....	40.0	193	36x6	40x14	5800
United.....	United Motors Co., 675 North St., N. W., Grand Rapids, Mich.								
	Model A.....	1½	4-3½x8½	Buda.....	22.5	145	34x3½	34x5	2445
	Model B.....	2½	4-4½x8½	Buda.....	28.9	151	36x4	36x7	3150
	Model C.....	3½	4-4½x8½	Buda.....	28.9	167	36x5	36x5D	3975
	Model V.....	5	4-4½x8	Buda.....	32.4	160	36x5	40x6D	5100

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.O. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Ursus..... See page 27	Ursus Motor Co., 6601 W. Grand Ave., Chicago, Ill.								
	Model U30.....	1	4-3½x5½	Buda.....	21.0	Opt.	34x5	34x5	2025
	Model U40.....	1½	4-3½x5½	Buda.....	22.5	Opt.	36x4	36x7	2550
	Model U50.....	2½	4-4 x5½	Buda.....	25.6	Opt.	36x4	36x7	3250
Velie..... See page 25	Velie Motors Corp., 109 Velie Place, Moline, Ill.	1½	4-3½x5	Continental.....	22.5	133	36x3½	36x5	2200
Vim.....	Vim Motor Truck Co., Roberts Ave & Fox St., Philadelphia, Pa.								
	Model 29.....	½	4-3½x4½	Own.....	15.6	108	31x4P	31x4P	\$1355
	Model 31.....	1	4-3½x5½	Hercules.....	22.5	125	35x5P	35x5P	2475
	Model 22.....	2	4-3½x5½	Hercules.....	22.5	142	36x5	36x6	3150
	Model 23.....	3	4-4½x5½	Hercules.....	28.9	175	36x5	36x5D	3950
	Vreeland Motor Co.—See Ultimate.								
Walter.....	Walter Motor Truck Co., Poughkeepsie, N. Y.	5	4-4½x6½	Waukesha.....	32.4	168	36x6	40x6D	5600
Ward La France..... See page 47	La France Truck Corp. Ward, Elmira, N.Y.								
	Model 2B.....	2½	4-4½x5½	.....	30.6	170	36x4	36x7	3590
	Model 4A.....	3½	4-4½x6½	.....	32.4	162	36x5	36x5D	4690
	Model 5A.....	5	4-5 x6½	.....	40.0	164	36x6	40x6D	4790
						190			5690
Watson.....	Watson Products Corp., Canastota, N.Y.								
	Model B.....	¾	4-3½x5½	Waukesha.....	22.5	128	35x5	35x5	1750
	Model N.....	3½	4-4½x5½	Continental.....	32.4	168	36x5	36x10	4250
Western.....	Western Truck Mfg. Co., 122 N. Curtis St., Chicago, Ill.								
	Model C.....	2	4-4½x5½	Continental.....	27.2	146	36x4	36x6	2400
	Model F.....	3	4-4½x5½	Continental.....	27.2	158	36x4	36x7	2800
	Model T.....	7	4-4½x5½	Wisconsin.....	36.1	146	36x6	40x7D	5000
White.....	White Co., 6611 Euclid Ave., Cleveland, Ohio.								
	Model 15.....	¾	4-3½x5½	Own.....	22.5	133	34x5P	34x5P	2600
	Model 20.....	2	4-3½x5½	Own.....	22.5	157	34x5P	36x4D	3450
	Model 40.....	3	4-3½x5½	Own.....	22.5	174	36x5	40x5D	4500
	Model 40.....	3½	4-3½x5½	Own.....	22.5	174	36x5	40x5D	4500
	Model 45.....	5	4-4½x5½	Own.....	28.9	174	36x6	40x6D	5000
White Hickory.....	White Hickory Motor Corp., East Point, Ga.								
	Model E.....	1	4-3½x5	Continental.....	22.5	124	34x5	34x5	2450
	Model H.....	1½	4-3½x5	Continental.....	22.5	144	36x3½	36x5	2750
	Model K.....	2½	4-4½x5½	Continental.....	27.2	150	36x4	36x7	3350
Wichita.....	Wichita Motors Co., Wichita Falls, Texas.								
	Model K.....	1	4-3½x5	Own.....	19.6	144	36x3	36x4	2300
	Model L.....	1½	4-3½x5½	Waukesha.....	22.5	144	36x3½	36x5	2600
	Model M.....	2	4-3½x5½	Waukesha.....	22.5	144	36x3½	36x6	2800
	Model R.....	2½	4-3½x5½	Waukesha.....	22.5	144	36x4	36x7	3000
	Model RX.....	2½	4-4½x6	Beaver.....	28.9	160	36x4	36x8	3600
	Model O.....	3½	4-4½x6	Beaver.....	28.9	165	36x5	36x5D	4000
	Model S.....	5	4-4½x6	Beaver.....	32.4	165	36x6	40x6D	5000
	Willys-Overland, Inc.—See Overland.								
Wilson.....	Wilson Co., J. C., 15th & Warren Aves., Detroit, Mich.								
	Model F.....	1½	4-3½x5½	Own.....	22.5	140	36x3½	36x5	2650
	Model EA.....	2½	4-4 x5½	Own.....	25.6	152	36x4	36x7	3300
	Model G.....	3½	4-4½x5½	Own.....	32.4	160	36x5	36x5D	4300
	Model H.....	5	4-4½x6	Own.....	37.5	160	36x6	40x6D	5275
Winther..... See page 17	Winther Motor Truck Co. Kenosha Wis.								
	Model 751.....	1	4-3½x5	Herachell-Spill.....	19.6	135	34x4½	35x5	1795
	Model 39.....	1½	4-3½x5	Wisconsin.....	22.5	140	34x3½	34x5	2450
	Model 430.....	1½	4-3½x5	Wisconsin.....	22.5	132	32x4	32x4	2850
	Model 49.....	2	4-4 x5	Wisconsin.....	25.6	147	34x4	34x4D	3250
	Model 450.....	2½	4-4 x5	Wisconsin.....	25.6	150	34x4	34x6	3690
	Model 70.....	3½	4-4 x6	Wisconsin.....	25.6	150	36x5	36x5D	4200
	Model 109.....	5	4-4½x6	Wisconsin.....	32.4	162	36x6	40x6D	5250
	Model 140.....	7	4-5 x6	Wisconsin.....	40.0	162	36x6	40x7D	5900

Please mention The Automobile Trade Directory

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, B. and S. of Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Witt-Will	Witt-Will Co., 52 N. St., N. E., Washington, D. C.								
	Model N	1½	4-3½x5½	Continental	22.5	120	36x3½	36x4	\$2400
	Model N	1½	4-3½x5½	Continental	22.5	144	36x3½	36x5	2650
	Model P	2½	4-4½x5½	Continental	27.2	144	36x3½	36x7	3250
	Model F	2	4-4½x5½	Continental	27.2	144	36x3½	36x7	3350
Weaverline	American Commercial Car Co., Detroit Mich.								
See page 43	Model C	1½	4-3½x5	Continental	22.5	140	34x3½	34x5	2380
	Model D	2	4-3½x5	Continental	22.5	148	34x4	34x3½	2450
	Model L	3½	4-4½x5½	Continental	32.4	186	36x5	36x10	4150
Yellow Cab	Yellow Cab Mfg. Co., Chicago, Ill.								
See page 23									

Electric Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	Make of Battery	Wheel Base	Size of Tires		Price
					Front	Rear	
C. T.	Commercial Truck Co., Hunting Park & Rising Sun Ave., Philadelphia, Pa.						
	Model BR1	½	Opt.	89½	36x8	36x3	
	Model BR2	1	Opt.	101	36x3½		
	Model BR3	2	Opt.	116	36x4	36x4D	
	Model AK7	3¼	Opt.	122	36x8	36x4D	
	Model AK7	3½	Opt.	126	36x5	36x5D	
	Model AK10	5	Opt.	133	36x7	36x5D	
Ehrlich	Ehrlich Electric Construction Co., 1807 Walnut St., Chicago, Ill.						
	Model 1002A	1	Edison	94	36x3	36x3½	
	Model 1002D	1½	Edison	108	36x4	36x5	
	Model 1002G	2	Edison	120	36x5	36x6	
	Model 1002F	3	Edison	130	36x6	36x7	
Lansden	Lansden Co., Power St., Danbury, Conn.						
	Model BB	½	Opt.	94	34x4P	34x4P	
	Model M	1	Opt.	108	36x3	36x3½	
	Model M	2	Opt.	121	36x4	36x5 D	
	Model M	3½	Opt.	133	36x5	36x4D	
	Model M	5	Opt.	146	36x6	36x5D	
Onoda	Onoda Motor Truck Co., Webster & Willow Sts., Green Bay, Wis.						
	Model 2E	2	Opt.	111	36x4	36x7	
	Model 5-E	5	Opt.	141	36x6	40x12	
	Model (Special)	¾	Opt.	96	36x3	36x3½	
Walker	Walker Vehicle Co., State and 87th Sts., Chicago, Ill.						
	Model M	½	Opt.	93	34x3	36x3½	
	Model K	1	Opt.	96	34x3½	36x4	
	Model L	2	Opt.	112	36x4	36x6	
	Model P	3½	Opt.	131	36x5	36x5D	
	Model N	5	Opt.	141	36x6	36x6D	
Ward	Ward Motor Vehicle Co., S. Fulton Ave., Mt. Vernon, N. Y.						
	Model W-S. 2	750 lbs.	Opt.	88	32x3	22x3	
	Model W-A	1250 lbs.	Opt.	90	32x3	24x3½	
	Model W-B	1	Opt.	102	34x3½	36x4	
	Model W-D	1	Opt.	114	36x5	36x7	
	Model W-F	2½	Opt.	123	36x5	36x8	
	Model W-H	5	Opt.	144	36x7	40x10	

Electric Industrial Trucks & Tractors

Automatic Transportation Co., 2933 Main St., Buffalo, N. Y.
 Baker B. & L. Co., Cleveland, Ohio
 Industrial Truck Co. (Div. Cowan Truck Co.), Holyoke, Mass.
 Crescent Truck Co., 347-49 First Ave., Elizabeth, N. J.
 Elwell-Parker Co., 4223 St. Clair Ave., Cleveland, Ohio
 Hunt Co., C.W., 5080 Richmond Ter. W. New Brighton, N. Y.

Karry-Lode Industrial Truck Co., 98-100 Mott Ave., Long Island City, N. Y.
 Koppel Industrial Car & Equipment Co., Koppel, Pa.
 Lakewood Engineering Co., Berea Rd., Cleveland, Ohio
 Lansing Co., Lansing, Mich.
 Mercury Mfg. Co., 4118 S. Halsted St., Chicago, Ill.
 Ross Carrier Co., Second & Miller Sts., Benton Harbor, Mich.

Please mention The Automobile Trade Directory

Tractors

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.A.C.C. H.P.	Fuel	Price
Adams	Adams Co., Marysville, Ohio.....	Wheel	.....	1-9-13	....	{Gasoline Kerosene	\$ 800
Advance-Rumely Oil Pull 12-20	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-6x8	31.2	{Gasoline Kerosene	....
Advance-Rumely Oil Pull 16-30	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-7x8½	39.2	Kerosene	....
Advance-Rumely Oil Pull 20-40	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Cwn	2-8x10	51.2	Kerosene	....
Advance-Rumely Oil Pull 30-60	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Cwn	2-16x12	16.1	Kerosene	....
	Agrimotor Mfg. Co.—See Mid-West.						
Allis-Chalmers 6-12 General Purpose	Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	Wheel	LeRoi	4-3½x4½	15.6	Gasoline	....
Allis-Chalmers, 12-20	Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	Wheel	Midwest	4-4½x5½	27.2	Gasoline	....
Allis-Chalmers, 18-30	Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	Wheel	Own	4-4½x6½	36.1	{Gasoline Kerosene	....
Allwork I	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill..	Wheel	Own	4-5 x6	40.0	Kerosene	1675
Allwork II	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill..	Wheel	Own	4-4½x6	36.1	Kerosene	1875
American 20D	American Tractor Foundry & Mfg. Co., 315 W. Waterman St., Wichita, Kansas.....	Wheel	Erd	4-4½x6	36.1	{Gasoline Kerosene	....
American 20	American Tractor Foundry & Mfg. Co., 315 W. Waterman St., Wichita, Kansas.....	Wheel	Stearns	4-4x6	25.6	{Gasoline Kerosene	....
Appleton 12-20	Appleton Mfg. Co., Batavia, Ill.....	Wheel	Buda	4-4½x5½	28.9	{Gasoline Kerosene	1500
Aultman-Taylor 30-60	Aultman & Taylor Machinery Co., Mansfield, Ohio.	Wheel	Own	4-7x9	78.4	{Gasoline Kerosene	....
Aultman-Taylor 22-45	Aultman & Taylor Machinery Co., Mansfield, Ohio.	Wheel	Own	4-5½x8	43.4	{Gasoline Kerosene	....
Aultman-Taylor 16-30	Aultman & Taylor Machinery Co., Mansfield, Ohio	Wheel	Climax	4-5x6½	40.0	{Gasoline Kerosene	....
Automotive B-3	Automotive Corporation, Oakdale and Tracy Sts., Toledo, Ohio	Wheel	Hercules	4-4 x5½	25.6	Gasoline	1875
Avery 8-16	Avery Co., Peoria, Ill.....	Wheel	Own	2-5½x6	24.2	{Gasoline Kerosene Distillate	....
Avery 12-20	Avery Co., Peoria, Ill.....	Wheel	Own	4-4½x6	30.6	{Gasoline Kerosene Distillate	....
Avery 12-25	Avery Co., Peoria, Ill.....	Wheel	Own	2-6½x7	33.8	{Gasoline Kerosene Distillate	....
Avery 14-28	Avery Co., Peoria, Ill.....	Wheel	Own	4-4½x7	34.2	{Gasoline Kerosene Distillate	....
Avery 18-36	Avery Co., Peoria, Ill.....	Wheel	Own	4-5½x6	48.4	{Gasoline Kerosene Distillate	....
Avery 25-50	Avery Co., Peoria, Ill.....	Wheel	Own	4-6½x7	67.6	{Gasoline Kerosene Distillate	....
Avery 40-80	Avery Co., Peoria, Ill.....	Wheel	Own	4-7½x8	96.8	{Gasoline Kerosene Distillate	....
Avery B	Avery Co., Peoria, Ill.....	Wheel	Own	4-3 x5	14.4	{Gasoline Kerosene	....
Avery C	Avery Co., Peoria, Ill.....	Wheel	Own	6-3 x4	21.6	{Gasoline Kerosene	....
Bates Steel D	Bates Machine & Tractor Co., Henderson & Jackson Sts., Joliet, Ill.....	Crawler	Midwest	4-4½x5½	27.2	Gasoline	....
Baby Savidge	Backus Tractor Co., 917 E. Broadway, Alton, Ill..	Wheel	Gray (Viet'y)	4-8½x5	19.6	Gasoline	1095
Beeman G	Beeman Tractor Co., 311 Sixth Ave., S., Minneapolis, Minn.....	Wheel	Own	1-3½x4½	4.9	Gasoline	340
Beltrall B	Beltrall Tractor Co., 2237 Hampden Ave., St. Paul, Minn.....	Crawler	Waukesha	4-3½x5½	22.5	{Gasoline Distillate	....

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Best A-1	Best Gas Traction Co., C. L. Davis St., San Leandro, Cal.	Tracklayer	Own	4-6½x8½	67.6	Gasoline Kerosene Distillate	\$8750
Best B-3	Best Gas Traction Co., C. L. Davis Street, San Leandro, Cal.	Tracklayer	Own	4-4½x8½	36.1	Gasoline Kerosene Distillate	\$350
	Blewett Tractor Co., See Webfoot.						
Blumberg Steady Pull 12-34	Blumberg Motor Mfg Co., Burnett & Mesquite Sts., San Antonio, Texas	Wheel	Own	4-4 x5	25.6	Gasoline	1485
Boring	Boring Tractor Corp., Rockford, Ill.	Wheel	Waukesha	4-4½x6½	30.6	Gasoline Kerosene	....
Boss 12-34	Russell & Co., Mansillon, Ohio	Wheel	Waukesha	4-4½x5½	32.4	Gasoline	....
Boss 15-30	Russell & Co., Mansillon, Ohio	Wheel	Climax	4-4½x5½	32.4	Gasoline	....
Boss 20-40	Russell & Co., Mansillon, Ohio	Wheel	Climax	4-8½x7	48.0	Gasoline	....
Boss-Giant 36-60	Russell & Co., Mansillon, Ohio	Wheel	Own	4-8 x10	....	Gasoline Kerosene	....
Burn-Oil	Burn-Oil Tractor Co., Warren, Ind.	Wheel	Own	3-6½x7	35.6	Kerosene	1650
C. O. D.	C. O. D. Tractor Co., Minneapolis, Minn.	Wheel	Own	2-6½x7	43.8	Kerosene	1395
	Case Plow Works Co., J. L.—See Walkin.						
Capita	Disinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-4x7	25.6	Gasoline Kerosene	890
Capital	Disinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-5 x8	40.0	Kerosene	1000
Capital	Disinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-5½x8½	48.4	Kerosene	1250
Case 10-18	Case T. M. Co., J. L. State & Douglas Sts., Racine, Wis.	Wheel	Own	4-3½x8	24.0	Gasoline Kerosene Distillate	1250
Case 15-37	Case T. M. Co., J. L. State & Douglas Sts., Racine, Wis.	Wheel	Own	4-4½x8	32.4	Gasoline Kerosene Distillate	1865
Case 23-40	Case T. M. Co., J. L. State & Douglas Sts., Racine, Wis.	Wheel	Own	4-5½x8½	48.4	Gasoline Kerosene Distillate	3350
Caterpillar 75	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-7½x8	90.0	Distillate	....
Caterpillar 45	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-6 x7	57.6	Distillate	....
Caterpillar, 5 tons	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-4½x8	36.1	Gasoline	4250
Caterpillar, 10 tons	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-6½x7	67.6	Gasoline	6500
Chicago 40	Shaw Am'n, Boyne City, Mich.	Wheel	Own	4-4½x8	32.4	Gasoline Kerosene	2500
Cletrac W 12-30	Cleveland Tractor Co., Lamb & Euclid Aves., Cleveland, Ohio	Crawler	Own	4-4 x8½	25.6	Gasoline Kerosene	1495
	Cleveland Tractor Co.—See Cletrac.						
Coleman	Farmers Mfg. Co., Scarritt Bldg., Kansas City, Mo.	Wheel	Climax	4-5 x8½	40.0	Gasoline Kerosene	1850
Comet 6 See page 31	Comet Automobile Co., 825-69 Garfield Ave., Decatur, Ill.	Wheel	Erd	4-4 x6	25.6	Gasoline Kerosene	1875
	Consolidated Gas & Gasoline Engine Co. See Do-it-all.						
Common Sense	Farm Power & Sales Co., 623 Ninth St., S. E., Minneapolis, Minn.	Wheel	Erd	4-5 x6	40.0	Gasoline	2200
Craig	Craig Tractor Co., Guardian Bldg., Cleveland, Ohio	Wheel	Beaver	4-4½x8	36.1	Kerosene	....
	Crown Iron Works—See Nilson.						
Dakota	Pope Mfg. Co., Watertown, S. Dakota	Wheel	Doman	4-4½x8	36.1	Gasoline	1750
Dart Blue J.	Dart Trunk & Tractor Corp., Waterloo, Iowa	Wheel	.....	4-4½x8	32.4	Gasoline	2100
	Daugh Mfg. Co.—See Sandusky.						

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Trac-tion	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
	Dayton-Dowd Co.—See Leader.						
Depue A	Depue Brothers Mfg. Co., Second Ave. & Arnold St., Clinton, Iowa.	Wheel	Buda	4-4½x6	32.4	Gasoline	\$2500
	Dessinger & Bro. Co., C. H. A.—See Capital.						
	Detroit Culto Tractor Corp.—See Culto.						
Dill	Dill Tractor Mfg. Co., Little Rock, Ark.	Wheel	Continental	4-4½x5½	32.4	Gasoline	2480
Do-it-all	Consolidated Gas & Gasoline Engine Co., 202 Fulton St., New York, N. Y.	Wheel	Own	1-4½x5	6.0	Gasoline	595
Dual See page 745	Dual Truck & Tractor Co. Decatur Ill.						
	Electric Wheel Co.—See Allwork.						
E. B. 12-20	Emerson-Brantingham Implement Co., 2723 University Ave., S. E., Minneapolis, Minn.	Wheel	Own	4-4½x5	36.1	Kerosene	....
Eagle F12-22	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis.	Wheel	Own	2-7 x8	39.6	Kerosene	1390
Eagle F16-30	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis.	Wheel	Own	2-8 x8	51.5	Kerosene	1850
Elgin	Elgin Tractor Corp., Piqua, Ohio.	Wheel	Erd	4-4 x6	25.6	Gasoline Kerosene	1385
	Evans Mfg. Co.—See Hudson.						
Fageol 19-12	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.	Wheel	Lycoming	4-3½x5	19.6	Gasoline Distillate	1625
Farm Horse B	Farm Horse Traction Works, Guttenburg, Iowa	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	1885
	Farm Power & Sales Co.—See Common Sense						
Farquhar 15-25	Farquhar Co., A. B., York, Pa.	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	....
Farquhar 4-30	Farquhar Co., A. B., York, Pa.	Wheel	Own	4-6 x8	57.6	Gasoline Kerosene	....
Farquhar 4-40	Farquhar Co., A. B., York, Pa.	Wheel	Own	4-7 x8	78.4	Gasoline Kerosene	....
Fitch 4	Four Drive Tractor Co., 949 E. Maple St., Big Rapids, Mich.	Wheel	Climax	4-5 x6½	40.0	Gasoline Kerosene	3300
Flour City 20-35	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.	Wheel	Own	4-5½x6	44.1	Kerosene	....
Flour City 30-50	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.	Wheel	Own	4-6½x7	62.8	Kerosene	....
Flour City 40-70	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.	Wheel	Own	4-7½x9	90.0	Kerosene	....
Flour City, Jr. 14-24	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.	Wheel	Own	4-5 x5	40.0	Kerosene	....
	Ford & Son, Henry.—See Fordson.						
Fordson	Ford Motor Co. of Delaware, Elm St. (Tractor Division), Dearborn, Mich.	Wheel	Own	4-4 x5	25.6	Kerosene	625
	Four Drive Tractor Co.—See Fitch.						
Franklin C18-30	Franklin Tractor Co., Greenville, Ohio	Crawler	Climax	4-5 x6½	40.0	Gasoline Kerosene Distillate	....
Frick A	Frick Co., Waynesboro, Pa.	Wheel	Erd	4-4 x6	25.6	Kerosene	1450
Frick C	Frick Co., Waynesboro, Pa.	Wheel	Beaver	4-4½x6	32.1	Gasoline Kerosene	1800
Fulton	Fulton Tractor Mfg. Co., Anderson, Ind.	Wheel	Waukesha	4-3½x5½	22.5	Gasoline	1275
G. O. G.	General Ordnance Co., 2 W. 43rd St., New York, N. Y. (Plants at Derby, Conn. and Cedar Rapids, Iowa.)	Wheel	Waukesha	4-4½x5¾	32.4	Gasoline Kerosene	1485
	General Ordnance Co.—See G. O.						

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Grain Belt G	Grain Belt Mfg. Co., 202 Seventh Ave., Fargo, N. D.	Wheel	Waukesha	4-4½x8½	36.1	Gasoline	\$2500
Gray 18-36	Gray Tractor Co., 30th Ave., S. E., & N. P. R. R., Minneapolis, Minn.	Wheel	Waukesha	4-4½x8½	36.1	Gasoline	2250
Great Western	Great Western Tractor Co., First Ave. & 31st St., Council Bluffs, Iowa.	Wheel	Beaver	4-4½x8	36.1	Kerosene	.....
Hart-Parr 30	Hart-Parr Co., Lawler St., Charles City, Iowa.	Wheel	Own	2-6½x7	33.8	Kerosene	1595
Hart-Parr 20	Hart-Parr Co., Lawler St., Charles City, Iowa.	Wheel	Own	2-5½x6½	22.0	Kerosene	1195
Heider C 12-20	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4½x8½	32.4	(Gasoline) (Kerosene)	.....
Heider D 9-16	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4½x5½	28.9	(Gasoline) (Kerosene)	.....
Huber Light Four 12-25	Holt Mfg. Co.—See Caterpillar.						
Huber-Super Four 15-30	Huber Mfg. Co., Marion Ohio.	Wheel	Waukesha	4-4½x5½	32.4	(Gasoline) (Kerosene)	.....
Hudson L	Huber Mfg. Co., Marion, Ohio.	Wheel	Midwest	4-4½x6	32.4	Gasoline	.....
Illinois	Evans Mfg. Co., Hudson, Ohio.	Wheel	Buda	4-4½x6	32.4	Gasoline	.....
Imperial 40	Illinois Tractor Co., Lincoln St., Bloomington, Ill.	Wheel	Climax	4-5 x8½	40.0	Kerosene	2500
Indiana	Imperial Machine Co., 1611 Central Ave., Minneapolis, Minn.	Wheel	Own	4-7½x9	90.0	(Gasoline) (Kerosene)	5000
International 15-20	Indiana Silo & Tractor Co., Anderson, Ind.	Wheel	Le Roi	4-3½x4½	15.6	Gasoline	.....
International 8-16	International Harvester Co. Harvester Bldg., Chicago, Ill.	Wheel	Own	4-5½x8	44.1	(Gasoline) (Kerosene) (Distillate)	.....
J T-N	International Harvester Co. Harvester Bldg., Chicago, Ill. See also Titan.	Wheel	Own	4-4½x8	28.9	(Gasoline) (Kerosene) (Distillate)	.....
Keok-Gonnerman	J.T. Tractor Co., 1515 Fairfield Ave., Cleveland, Ohio	Crawler	Chief	4-4½x6	36.1	(Gasoline) (Kerosene)	3485
Kohl	Kansas City Hay Press Co.—See Prairie Dog.						
La Crosse M	Keok-Gonnerman Co., 601 W. Fourth St., Mt. Vernon, Ind.	Wheel	Own	2-7½x8	42.1	(Gasoline) (Kerosene)	1650
La Crosse G	Kinnard & Sons Mfg. Co.—See Flour City.						
Lang	Kohl Tractor Co., 7507 Linwood Ave., Cleveland, Ohio.	Wheel	Beaver	4-4½x6	36.1	Kerosene	2250
Lauson 15-30	LaCrosse Tractor Co., Front & King Sts., La-Crosse, Wis.	Wheel	Own	2-4 x8	.....	Kerosene	750
Leader G 18-35	LaCrosse Tractor Co., Front & King Sts., La-Crosse, Wis.	Wheel	Own	2-6 x7	29.0	Kerosene	945
Leader N 16-33	Lang Tractor Co., Palace Bldg., Minneapolis, Minn.	Wheel	Climax	4-5½x6	48.4	(Gasoline) (Kerosene)	1650
Little Giant A	Lauson Mfg. Co., John W. Monroe St., New Holstein, Wis.	Wheel	Own	4-4½x6	36.1	(Gasoline) (Kerosene)	.....
Little Giant B	Lauson Mfg. Co., John W. Monroe St., New Holstein, Wis.	Wheel	Own	4-4½x5½	30.2	Gasoline	.....
Magnet B 14-38	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Crawler	Climax	4-5 x6	40.0	Kerosene	2775
Mark 6	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Wheel	Climax	4-5 x8½	40.0	Kerosene	1985
	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-5½x6	44.1	Kerosene	3300
	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-4½x5	28.9	Kerosene	2200
	Magnet Tractor Co., Globe Bldg., Minneapolis, Minn.	Wheel	Waukesha	4-4½x8½	32.4	(Gasoline) (Kerosene)	1875
	Schmidt Machinery Co., Basing Block, Minneapolis, Minn.	Wheel	Buda	4-4½x6	32.4	(Gasoline) (Kerosene)	1800

Do not mention The Automobile Trade Directory

Tractors (Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Master Jr.	Master Tractor Co., Lumber Exchange Bldg., Minneapolis, Minn.	Wheel	Le Roi	4-3½x4	9.0	Gasoline	\$600
	Midwest Engine Co. See Utilitor.						
Mid-West A	Agrimotor Mfg. Co., 421 N. Water St., Wichita Kans.	Wheel	Gile	2-5 x6½	20.0	Gasoline	1085
Minneapolis 12-25	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4½x7	32.4	Gasoline Kerosene	1235
Minneapolis 22-44	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-6 x7	57.6	Gasoline Kerosene	3600
Minneapolis 35-70	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-7½x9	84.1	Gasoline Kerosene	4900
Minneapolis 17-30	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4½x7	36.1	Gasoline Kerosene	2000
Monarch 30-18	Monarch Tractor Co., Watertown, Wis.	Crawler	Beaver	4-4½x6	36.1	Gasoline Kerosene	2500
Moline Universal D	Moline Plow Co., Moline, Ill.	Wheel	Own	4-3½x5	19.6	Gasoline	1325
Motor	Wabash Tractor Co., Wabash, Ind.	Wheel	Buda	4-4½x6	32.4	Gasoline	2250
N. B. 1	New Britain Machine Co., Chestnut St., New Britain, Conn.	Wheel	Own	2-2½x4	6.05	Gasoline	425
N. B. 2	New Britain Machine Co., Chestnut St., New Britain, Conn.	Wheel	Own	2-2½x4	6.05	Gasoline	425
New Age D-4	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn.	Wheel	Beaver	4-4½x6	32.4	Kerosene	....
Nilson Junior	Crown Iron Works, 1229 Tyler St. N. E., Minneapolis, Minn.	Wheel	Waukesha	4-4½x5½	28.9	Gasoline Kerosene	1775
Nilson Senior	Crown Iron Works, 1229 Tyler St. N. E., Minneapolis, Minn.	Wheel	Waukesha	4-5 x6½	40.0	Gasoline Kerosene	2675
Ohio B	Ohio General Tractor Co., Citizens Bldg., Cleveland, Ohio.	Crawler	Buda	4-4½x5½	28.9	Gasoline Kerosene	1800
Peoria	Peoria Tractor Corp., of Iowa, Peoria, Ill.	Wheel	Chimax	4-5 x6½	40.0	Kerosene	....
Pioneer 18-36	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn.	Wheel	Own	4-5½x6	48.4	Gasoline Kerosene	....
Pioneer 30	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn.	Wheel	Own	4-7x8	78.4	Gasoline	....
Plowman 15-30	Plowman Tractor Co., E. Fourth St. & Limits, Waterloo, Iowa.	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	1995
	Pope Mfg. Co.—See Dakota.						
Port Huron A	Port Huron Engine & Thresher Co., 3401-3559 24th St., Port Huron, Mich.	Wheel	Chief	4-4½x6	36.1	Gasoline Kerosene	1700
Prairie Dog L	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo.	Wheel	Waukesha	4-3½x5½	22.5	Gasoline	.....
Prairie Dog D	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo.	Wheel	Waukesha	4-4½x6	32.4	Gasoline Kerosene	.....
Reed A	Reed Foundry & Machine Co., Kalamazoo, Mich.	Wheel	Doman	4-4½x6	36.1	Kerosene	2250
Reed B	Reed Foundry & Machine Co., Kalamazoo, Mich.	Wheel	Doman	4-5 x6	40.0	Kerosene	2400
Reliable	Reliable Tractor & Engine Co., Portsmouth, Ohio.	Wheel	Own	3-6x7	33.2	Kerosene	985
	Rock Island Plow Co.—See Heider.						

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	H.P.	Fuel	Price
Samson M	Russell & Co.—See Boss, also Boss Giant.						
Samson Sieve-Grip	Samson Tractor Co., Industrial Ave., Janesville, Wis.	Wheel	Northway	4-4 x5½	25.6	Gasoline	995
Sandusky J 10-20	Samson Sieve-Grip Tractor Co., 1104 S. Aurora St. Stockton, Cal.	Wheel	Own	1-4½x8½	28.9	Gasoline Distillate	\$1500
Sandusky E 15-35	Dauch Mfg. Co., 1531 First St., Sandusky, Ohio.	Wheel	Own	1-4½x5½	28.9	Gasoline Kerosene Distillate	1250
	Dauch Mfg. Co., 1531 First St., Sandusky, Ohio.	Wheel	Own	1-5 x8½	40.0	Gasoline Kerosene Distillate	1750
	Scientific Farming Machinery Co.—See Mark 6						
	Shaw Ass'n.—See Chicago						
Shelby C	Shelby Tractor & Truck Co., Shelby, Ohio.....	Wheel	Erd	4-3½x5	22.5	Gasoline	.....
Shelby D	Shelby Tractor & Truck Co., Shelby, Ohio.....	Wheel	Beaver Erd	4-4½x6	36.1	Gasoline Kerosene	.....
Short Turn W	Short Turn Tractor Co., Globe Bldg. Minneapolis, Minn.....	Wheel	Beaver	4-4½x6	36.1	Kerosene	1500
Simplicity 14-25	Turner Mfg. Co., 230 Lake St., Port Washington, Wis.....	Wheel	Buda	4-4½x5½	28.9	Gasoline Kerosene	1295
Square Turn A	Square Turn Tractor Co., Norfolk, Neb.	Wheel	Climax	4-5 x8½	40.0	Gasoline Kerosene	2075
Stewart A	Stewart Tractor Co. of Wisconsin, Waupaca, Wis.	Wheel	Waukesha	4-4½x8½	32.4	Gasoline Kerosene	5000
Stewart B	Stewart Tractor Co. of Wisconsin, Waupaca, Wis.	Wheel	Waukesha	4-3½x5½	22.5	Gasoline	2750
Stinson 4-E	Stinson Tractor Co., 1702 16th St., Superior, Wis....	Wheel	Beaver	4-4½x6	36.1	Gasoline Kerosene	.....
Stinson Super E	Stinson Tractor Co., 1702 16th St., Superior, Wis.	Wheel	Stearns	4-5 x8½	40.0	Gasoline Kerosene	.....
Stoee	Stoee Tractor Mfg. Co., 11th and Whitaker Sts. Texarkana, Texas.....	Wheel	Beaver	4-4½x6	32.4	Gasoline Kerosene	2250
Strite	Strite Tractor Co., 307 Third St., S., Minneapolis, Minn.....	Wheel	Climax	4-5 x8½	40.0	Gasoline Kerosene	.....
Titan 10-20	Sutherland Mfg. Co.—See New Age; also, World International Harvester Co. Harvester Bldg., Chicago, Ill.....	Wheel	Own	2-8½x8	35.4	Gasoline Kerosene Distillate	4000
Topp-Stewart B	Topp-Stewart Tractor Co., Clintonville, Wis.....	Wheel	Waukesha	4-4½x8½	36.1	Gasoline	1800
Townsend 15-30	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.....	Wheel	Own	2-7x8	39.3	Kerosene	3200
Townsend 25-30	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.....	Wheel	Own	2-8½x10	57.4	Kerosene	2400
Triumph	Triumph Tractor & Truck Co., 110-16 Southwest Blvd., Kansas City, Mo.....	Wheel	Erd	4-4½x8	36.1	Gasoline Kerosene	.....
Trundar 10	Buckeye Mfg. Co., 1801-09 Columbus Ave., Anderson, Ind.....	Crawler	Waukesha	4-8x8½	60.0	Gasoline Kerosene	.....
Twis City 12-20	Turner Mfg. Co.—See Simplicity.						
Twis City 40 65	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.....	Wheel	Own	4-4½x8	28.9	Kerosene Gasoline	.....
Two-Way A	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.....	Wheel	Own	1-7½x9	75.0	Kerosene Gasoline	.....
Uncle Sam 20-30	Two-Way Plow Tractor Co., Dayton, Ohio.....	Wheel	Buda	4-4½x6	32.4	Gasoline Kerosene	1600
Utilitor	U. S. Tractor & Machinery Co., 100 Tayco St., Menasha, Wis.....	Wheel	Beaver	4-4½x6	36.1	Gasoline Kerosene	.....
Valie 12-24	Midwest Engine Co., Martindale Ave., Indianapolis, Ind.....	Wheel	Own	1-3½x4½	4.9	Gasoline	380
Valie 25	Valie Motors Corp., 109 Valie Place, Moline, Ill....	Wheel	Own	4-4½x8½	27.2	Kerosene	1785

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.A.C.C. H.P.	Fuel	Price
Victory	Victory Tractor Co., Greensburg, Ind.	Wheel	Grey	4-3½x5	19.6	Gasoline	\$1350
Victory	Victory Tractor Co., Greensburg, Ind.	Wheel	Waukesha	4-4¼x5½	29.9	Gasoline	1750
Wallis K	Case Plow Works Co., J. L. Racine, Wis.	Wheel	Own	4-4¼x5½	28.9	(Gasoline Kerosene)	....
Waterloo Boy N	Waterloo Gasoline Engine Co., Miles St., Waterloo, Iowa.	Wheel	Own	2-6½x7	33.8	Kerosene	....
Webfoot 53	Blewett Tractor Co., 21st & A Sts., Tacoma, Wash.	Crawler	Wisconsin	4-5½x7	52.9	(Gasoline Distillate)	5250
Wetmore 12-25	Wetmore, H. A., W. Second & Main Sts., Sioux City, Iowa.	Wheel	Waukesha	4-4 x5½	25.6	(Gasoline Kerosene)	1650
Whitney 9-18	Whitney Tractor Co., W. Johnson St., Upper Sandusky, Ohio.	Wheel	Own	2-5½x6½	24.2	Gasoline	1175
Wisconsin E.	Wisconsin Farm Tractor Co., Sauk City, Wis.	Wheel	Climax	4-5 x6½	40.0	Kerosene	2250
World	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn.	Wheel	Beaver	4-4¾x6	36.1	Kerosene	....
Yuba 20-35	Yuba Mfg. Co., Marysville, Cal.	Crawler	Wisconsin	4-5½x7	52.9	Distillate	4892
Yuba 12-20	Yuba Mfg. Co., Marysville, Cal.	Crawler	Waukesha	4-4½x6½	32.4	Distillate	2945
Zelle 12-25	Zelle Tractor Co., Merchants-Laclede Bldg., St. Louis, Mo.	Wheel	....	4-4¼x5½	28.9	Kerosene	....

Motorcycles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	Transmission	Price
Cleveland 21	Cleveland Motorcycle Mfg. Co., 7209 Platt Ave., Cleveland, Ohio.	1-2¾x2¾	Own	Worm	\$275
	Cyclemotor Corp.—See Evans.				
Eagle	Eagle Motorcycle Co., 715 Centre Street, Brockton, Mass.	2-3½x3½	Sparks	Three-Speed Chain	405 450
Emblem	Emblem Mfg. Co., Angola, N. Y.	2-2½x3	Own	Three-Speed Chain	300
Excelsior 1921	Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill.	2-2½x3½	Own	Three-Speed Chain	435 485
	See also Henderson.				
Evans G.	Cyclemotor Corp., 149 Cady St., Rochester, N. Y.	1-1½x2	Own	Direct Belt	165
Harley-Davidson 20J	Harley-Davidson Motor Co., 3732 Chestnut St., Milwaukee, Wis.	2-3½x3½	Own	Three-Speed Chain	485
20WJ-JD		2-3½x3½	Own	Three-Speed Chain	445
		2-3-7-16x4	Own	Three-Speed Chain	520
	Hendee Mfg. Co.—See Indian.				
Henderson K.	Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill.	4-2½x3½	Own	Three-Speed Chain	535 585
Indian Powerplus NE 21	Hendee Mfg. Co., 637 State St., Springfield, Mass.	2-3½x3½	Own	Three-Speed Chain	480
Indian Powerplus N 21		2-3½x3½	Own	Three-Speed Chain	440
Indian G 21		2-2½x3½	Own	Three-Speed Chain	400
Indian G.E. 21		2-2½x3½	Own	Three-Speed Chain	440
Iver-Johnson 16-4B	Johnson's Arms & Cycle Works, Iver, 109 River St., Fitchburg, Mass.	1-3¼x3¾	Own	Direct Belt	225
Iver-Johnson 16-4C		1-3¼x3¾	Own	Direct Chain	250
Iver-Johnson 16-4C.T.S.		1-3¼x3¾	Own	Two-Speed Chain	275
Iver-Johnson 16-7		2-3½x3¾	Own	Direct Chain	300
Iver-Johnson 16-7 T.S.		2-3½x3¾	Own	Two-Speed Chain	325
R. S. 21T	Reading Standard Co., Water St., Reading, Pa.	2-3½x4	Own	Three-Speed Chain	435
R. S. 21T.E.		2-3½x4	Own	Three-Speed Chain	475
Schickel T.	Schickel Motor Co., 57 Garden St., Stamford, Conn.	1-3 x2½	Own	Two-Speed Chain	247

Please mention The Automobile Trade Directory

Motor Boats

Brief Specifications, Prices and Names and Addresses of Manufacturers

Manufacturer's Name and Address	Type of Boat	Length	H. P.	No. of Cylinders	Price
Albany Boat Corp., Broadway & Seventh St., Watervliet, N. Y.	Runabout.....	26	40	4	\$ 3700
	Cruiser.....	36	90	4	9200
Belle Isle Boat & Engine Co., 9663 E. Jefferson Ave., Detroit, Mich.	Runabout.....	26	125	4	7500
Burger Boat Co., Manitowish, Wis.	Cruiser.....	36	25 35	4	4950 5200
Cape Cod Ship Building Corp., 387 Main St., Wareham, Mass.	Dory.....	30	4	1	.....
Consolidated Shipbuilding Corp., Morris Heights, New York N. Y.	Runabout.....	25	22	4	4000
	Runabout.....	32	35	6	.....
	Runabout.....	35	150	4	.....
	Cruiser.....	52	75	4	.....
Deshler-Carter Ship & Boat Building Co., Benton Harbor, Mich.	Runabout.....	24	30	4	3000
	Cruiser.....	40	100	6	10000
	Cruiser.....	50	200	8	18000
	Cruiser.....	60	400	16	28000
Elio Works, Ave. A & North St., Bayonne, N. J.	Elio Express.....	30	40	4	3500
	Elio Express.....	36	100	6	11500
	Cruisette.....	32	36	4	4000
	Cruiser.....	50	80	4	16500
Everett-Hunter Boat Co., McHenry, Ill.	Runabout.....	22	12	4	600
	Runabout.....	25	20	4	1000
Fay & Bowen Engine Co., Lake St., Geneva, N. Y.	Runabout.....	24	22	4	.....
	Runabout.....	30	50	6	.....
	Runabout.....	27	40	4	.....
Great Lakes Boat Building Corp., 333 Beecher St., Milwaukee, Wis.	Cruiser.....	54	300	12	27500
Hacker Boat Co., 1535 Crane Ave., Detroit, Mich.	Runabout.....	21	20	4	1675
	Runabout.....	26	125	4	6875
	Runabout.....	29	125	4	7650
	Runabout.....	35	200	6	9750
Hafer Boat Works, Spirit Lake, Iowa	Runabout.....	24	40	4	2000
	V. Bottom.....	27	60	4	2800
International Shipbuilding & Marine Engineering Corp., Nyack, N. Y.	Cruiser (Raised Deck).....	32	20	4	3950
	Cruiser (Bridge Deck).....	32	20	4	4300
	Cruiser.....	60	100	2	34000
Lader Marine Construction Co., Stamford, Conn.					
Mullins Body Corp., 182 Franklin Ave., Salem, Ohio	Motor Boat.....	25	60-75	6	4500
	Motor Boat.....	25	32-40	4	3100
	Motor Boat.....	21	32-40	4	2800
	Motor Boat.....	21	20	4	1990
	Motor Boat.....	17	9-12	4	990
	Special Launch.....	16	2 1/2	1	350
	Special Launch.....	16	3	1	375
	Special Launch.....	16	5	2	450
	Hydroplane.....	16	18-25	3	1450
	Steel Launch.....	18	8	2	.....
	Steel Launch.....	18	12	4	.....
	Wood Launch.....	17	3	1	.....
	Wood Launch.....	17	12	4	.....
Racine Boat Co., 1814 Clark St., Racine, Wis.	Wisco Runabout.....	19	12	4	1000
	Raco Runabout.....	25	20-30	4	1650
	Runabout.....	30	35	4	2250
	Runabout.....	35	40	4	2500
	Speed Boat.....	19	6	2	750
	Speed Boat.....	19	10	4	1000
	Launch.....	25	11	2	750
	Launch.....	30	15	2	950
	Launch.....	30	27 3/8	4	1500
Red Bank Yacht Works, Front St., Red Bank, N. J.			32-40	4	4500
Robinson Motor Boat Co., 207th St. & Harlem River, W., New York, N. Y.	Runabout.....	26	100	4	5000
	Runabout.....	30	150	6	8000
Robinson Motor Boat Co., 479 Sweeney St., North Tonawanda, N. Y.	Runabout.....	25	40	4	2700
	Runabout.....	22	125	4	4000
Robinson Motor Boat Co., 479 Sweeney St., North Tonawanda, N. Y.	Dory.....	20	11	1	795
	Dory Cruiser.....	25	16	4	4000

Please mention The Automobile Trade Directory

Motor Boats—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Manufacturer's Name and Address	Type of Boat	Length	H. P.	No. of Cylinders	Price
Torp Boat Mfg. Co., 125 Riverside Ave., Medford, Mass.	Dory.....	18	2	1	\$275
	Dory.....	20	6	2	475
	Dory.....	22	8	4	700
	Launch.....	22	12	4	1200
	Launch.....	26½	16	4	1800
Valley Boat Co., Saginaw, Mich.	Shallow Draft Launch.....	17	9	4	900
	Runabout.....	19	12	4	950
	Family Runabout.....	26	20	4	.....
	Runabout.....	25	30	4	1850
Ventnor Boat Works, Fifth & C Aves., Atlantic City, N. J.	Runabout.....	20	24	4	1500
	Runabout.....	20	5	2	350

Aircraft

AIRPLANES, SEAPLANES and FLYING BOATS

- Aeromarine Plane & Motor Co., Keyport, N. J.
 Anglo-American Corp., 42 Broadway, New York, N. Y.
 Boeing Airplane Co., (Georgetown), Seattle, Wash.
 Cantilever Aero Co., 1269 Broadway, New York, N. Y.
 Chicago Aero Works, 202 N. Wabash Ave., Chicago, Ill.
 Curtiss Aeroplane & Motor Corp., Garden City, N. Y.
 Dayton-Wright Co. (Moraine City), Dayton, Ohio.
 Eastern Aircraft Corp., 340 First St. (So. Boston), Boston, Mass.
 Gallaudet Aircraft Corp., 25 W. 43rd St., New York, N. Y.
 Harding, Zook & Bahl Airplane Corp., 107 N. Ninth St., Lincoln, Neb.
 Hild & Marshonet, Yale St., Hempstead, N. Y.
 L. W. F. Engineering Co., Third Ave. & Eighth St., College Point, N. Y.
 Lawson Airplane Co., First National Bank Bldg., Milwaukee, Wis.
 Lewis & Vought Corp., Webster & Seventh Aves., Long Island City, N. Y.
 Loening Aeronautical Engineering Corp., 351 W. 52nd St., New York, N. Y.
 Martin Co., G. L., 16800 St. Clair Ave., Cleveland, Ohio.
 Nebraska Aircraft Corp., Richards Block, Lincoln, Neb.
 Ordnance Engineering Corp., 120 Broadway, New York, N. Y.
 Richardson Aeroplane Corp., New Orleans, La.
 Sperry Aircraft Co., Lawrence, Farmingdale, N. Y.
 Thomas-Morse Aircraft Corp., Ithaca, N. Y.
 United Aircraft Engineering Corp., 52 Vanderbilt Ave., New York, N. Y.
 Victor Aircraft Corp., Freeport, N. Y.
 West Virginia Aircraft Co., Wheeling, W. Va.
 Williams Bros. Aircraft Corp., San Francisco, Cal. (See page 511.)
 Wittemann-Lewis Aircraft Co., Hasbrouck Heights, N. J.

DIRIGIBLES

- Connecticut Aircraft Co., 117 Court St., New Haven, Conn.
 French-American Balloon Co., Clayton, Mo.
 Goodyear Tire & Rubber Co., Akron, O. (See page 963.)

SECTION 2

Accessories, parts, materials and supplies for automobiles, commercial vehicles, tractors, motorcycles, motor boats and aircraft. Specialties for Ford cars; also machinery, tools, shop equipment and supplies for factories, garages and repair shops.

EVERYTHING in this section is listed alphabetically under the **NOUN**.



For example: "Pressed Steel Frames" are listed under "Frames,"—"Roller Bearings" under "Bearings."

"NORMA"

PRECISION BALL BEARINGS

(PATENTED)



Standardization on "NORMA" Precision Bearings by all makers of high-grade ignition apparatus and lighting generators, is an assurance of serviceable electrical apparatus. But—accidents will happen. And—to provide against them with the least possible inconvenience to car, truck and tractor users—"NORMA" Distributors, conveniently located as indicated above, carry complete stocks and can give prompt service to electrical repair men.

See that your electrical apparatus is "NORMA" equipped.

THE NORMA COMPANY OF AMERICA

Anable Avenue
Long Island City
New York

Ball, Roller, Thrust and Combination Bearings

SECTION II

Accessories, Parts, Machinery and Tools

Every product listed in this section is classified
alphabetically under the NOUN or principal word.

- ABRASIVE PAPERS**—See Paper, Emery and Sand
- ABRASIVE WHEEL TRUERS**—See Dressers, Emery Wheel
- ABRASIVE WHEELS**—See Wheels, Grinding
- ACCELERATOR PEDALS**—See Pedals, Special Accelerator
- ACCELERATOR PEDALS FOR FORDS**—See Accelerators, Foot
- ACCELERATORS, FOOT**—See Pedals, Special Accelerator
- ACCELERATORS, Foot, for Fords**
(Foot pedals for controlling throttle)
- Adamson Mfg. Co., East Palestine, O.
American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 77.)
Apo Mfg. Co., 703 Eddy St., Providence, R. I.
Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.
B. M. W.—See Genesee Auto Supply Co.
Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
Bull Dog—See Fulton Co.
Comfort Motor Machine Co., 715 Galapago St., Denver, Colo. "Simplex."
Cooper Mfg. Co.—See Fulton Co.
Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Speederator."
Donlin Auto Co., C. A., Hopkins, Mo.
Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Department for Webber Co., P. H., Hoopeston, Ill. "W. & C.")
(See page opposite title page.)
Ellison Brass Mfg. Co., Jamestown, N. Y.
Ewald—See Zinke Co.
Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for W. H. Thomas Mfg. Co., Spencer, Ia. "Bull Dog.") (See page 1019.)
Gasco—See General Auto Specialty Co.
Gemco Mfg. Co., 668 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
Genesee Auto Supply Co., Genesee, Ill. "B. M. W."
Heaton & Ault, 6248 Greenwood Ave., Chicago, Ill. "Red-I-Fit."
Humboldt—See Republic Auto Parts Co.
J. C. M.—See Mewshaw, J. C.
Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.
Lansfield Mfg. Co., 510 First Ave., West Haven, Conn.
- Mewshaw, J. C., Stock Exchange Bldg., Baltimore, Md. "J. C. M."
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich.
Nifty—See Sapp, Will A.
Perkins-Campbell Co., Cincinnati, O. (See page 115.)
Presto—See R. & R. Mfg. Co.
R. & R. Mfg. Co., 144 S. Delaware St., Indianapolis, Ind. "Presto."
Red-I-Fit—See Heaton & Ault
Republic Auto Parts Co., 51-55 Tenth St., Long Island City, N. Y. "Humboldt."
Rice Co., C. H., 218 Smith Bldg., Cherokee, Ia. "Sense."
Romort Mfg. Co.—See Zinke Co.
Sapp, Will A., Elgin, Neb. "Nifty."
Sense—See Rice Co.
Simplex—See Comfort Motor Machine Co.
Speederator—See Detroit Starter Co.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
Thomas Mfg. Co., W. H.—See Fulton Co.
Triumph—See Universal Products Co.
U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Triumph."
W. & C.—See Eckhouse & Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Webber & Co.—See Eckhouse & Co.
Williams Bros., Aircraft Corp., San Francisco, Cal. (See page 511.)
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald.") (See pages 688 and 689.)
- ACCESSORY CABINETS**—See Cabinets, Accessory
- ACCIDENT CASES**—See Cases, Medical Emergency.
- ACCOUNTING BOOKS**—See Books, Accounting
- ACCOUNTING SYSTEMS**—See Books, Accounting
- ACETYLENE BRAZING TORCHES**—See Torches, Acetylene
- ACETYLENE BURNER CLEANERS**—See Cleaners, Acetylene
- ACETYLENE BURNERS**—See Burners, Acetylene Lamp
- ACETYLENE GAS PURIFIERS**—See Purifiers, Acetylene Gas
- ACETYLENE GENERATORS**—See Generators, Acetylene

Everything is listed under the NOUN or principal word

ACETYLENE HEADLIGHTS—See Lamps or Headlights, Acetylene

ACETYLENE HEADLIGHTS, TRACTOR—See Headlights, Tractor Acetylene

ACETYLENE LAMP BURNERS—See Burners, Acetylene Lamp

ACETYLENE LAMP CONNECTORS—See Connectors, Acetylene Lamp

ACETYLENE LAMP LIGHTERS—See Lighters, Acetylene Lamp

ACETYLENE LAMPS—See Lamps, or Headlights, Acetylene

ACETYLENE PRESSURE REGULATORS—See Regulators, Acetylene Pressure

ACETYLENE TANK KEYS—See Keys, Acetylene

ACETYLENE TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

ACETYLENE TANKS—See Tanks, Acetylene

ACETYLENE WELDING TORCHES—See Torches, Acetylene Welding

ACID, BATTERY—See Electrolyte, Battery

ACID, CLEANING—See Compounds, Rust Preventing

ACID, SOLDERING—See Flux, Soldering

ADAPTERS, CHASSIS—See Converters, Chassis

ADAPTERS, Electric Lamp

(For converting gas or oil lamps into electric lamps)

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 561.)

Adlake—See Adams & Westlake Co.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)

Amco—See Aid Mfg. Co.

Chicago Electric Mfg. Co., 3317 S. Halsted St., Chicago, Ill. "Handy."

Gil-Bo—See Metal Specialties Mfg. Co.

Hammer Co., E. A., 1839 Euclid Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Manhattan Electrical Supply Co., 17 Park Place, New York, N. Y.

Metal Specialties Mfg. Co., 333-53 N. Kedzie Ave., Chicago, Ill. "Gil-Bo." (See page 555.)

Michon Mfg. Co., 124 N. Erie St., Toledo, O.

Miller Mfg. Co., E. L., 23 W. Third St., Kansas City, Mo. "Tillery."

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

S-H—See Stuart-Howland Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Tillery—See Miller Mfg. Co.

Williams Mfg. Co., Clarksburg, W. Va. "Wilson."

Wilson—See Williams Mfg. Co.

ADAPTERS, STORAGE BATTERY—See Connectors, Storage Battery

ADJUSTABLE VALVE LIFT RODS—See Rods, Adjustable Valve Lift

ADJUSTABLE WRENCHES—See Wrenches

ADJUSTERS, BELT, FOR FORDS—See Adjusters, Fan Belt

ADJUSTERS, Brake

Auto-Brake Adjuster Co., Schofield Bldg., Cleveland, O. "Cole."

Dearborn—See Auto-Brake Adjuster Co.

ADJUSTERS, Brake and Reverse Band for Fords

(Device to permit brake and reverse band to be adjusted from the outside of the transmission case)

Mattauch & Strong Co., 207 Sixth Ave., Des Moines, Iowa.

Michon, J. H., 124 N. Erie St., Toledo, O.

Standley Skid Chain Co., Boone, Iowa. (See page 381.)

ADJUSTERS, CARBURETOR OR DASH CONTROL FOR FORDS—See Controls, Dash Carburetor

ADJUSTER, DASH CONTROL FOR FORDS—See Controls, Dash Carburetor

ADJUSTERS, Fan Belt, for Fords

(Spring attachment for keeping a uniform and constant tension on belt so that when adjustment is once made it will be automatically maintained)

Champion—See Dexter Specialty Co.

Dexter Specialty Co., 113 N. Dexter St., Ionia, Mich. "Champion."

ADJUSTERS, RIM—See Tools, Demountable Rim

ADJUSTERS, TIRE—See Tools, Tire

ADJUSTERS, TIRE CHAIN—See Tighteners, Tire Chain

ADJUSTERS, VALVE—See Rods, Adjustable Valve Lift

ADJUSTERS, Valve Stem, for Fords

(For taking up wear and play between valve stem and push rod—See also Rods, Push)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)

Chadborn Sales Co., 300-12 Tenth Ave., S., Minneapolis, Minn. "Townsan."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

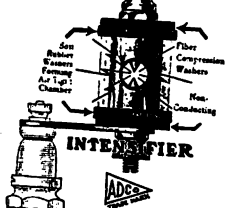
Everything is listed under the NOUN or principal word



AMERICAN AUTOMATIC DEVICES CO.

JEANNE

AUTOMOTIVE NECESSITIES OF MERIT



Brass and Steel Ford
Oil Gauge
Retail \$1.00



Gasoline gauge for
Fords. Guaranteed
for 5 years.

Retails\$1.50



\$2.50 Each



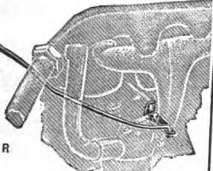
**FOR ALL
CARS
OPEN OR
CLOSED**

ADJUSTABLE-
CLEARVISION
SHIELD WIPER
WITH EQUALIZER WHICH GIVES
AN EVEN WIPING SURFACE

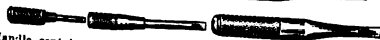
**ADJUSTABLE
TO THREE
DIFFERENT
LENGTHS**



GET-A-WAY
ACCELERATOR



Twin Red Rubber Wipers. Anti-Friction Fibre Bearing. Retail, 65c.



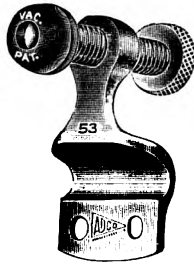
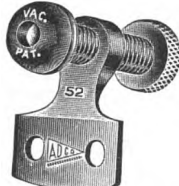
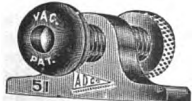
Adjustable. List \$3.00 and \$4.00



New principle—Finest Grease Gun ever built



The best bronze nickel-plated cap that money can buy.



One of these Vacuum Tip Anti-Rattlers will hold as firmly as two with ordinary tips.

AMERICAN
515 W. MONROE STREET

CHICAGO, ILLINOIS



Please mention The Automobile Trade Directory

ADJUSTERS, Valve Stem, for Fords (Continued)

Empress—See Bowen Products Corp.
Efemco—See Foster, Merriam & Co.
Foster, Merriam & Co., Meriden, Conn.
"Efemco." (See page 809.)
Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
Humboldt—See Republic Auto Parts Co.
Midway Mechanical Co., St. Paul, Minn.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
P. & L.—See Parkhurst-Lavender Auto & Machine Co.
Parkhurst-Lavender Auto & Machine Co., Webster City, Ia. "P. & L."
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
Townsan—See Chadbourn Sales Co.
Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

K. H. K.—See Kay Co.
Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."

ALARMS, Tire

(For sounding an alarm when tires are under or over inflated)

Ewing-Ely Mfg. Co., 3034 S. Main St., Los Angeles, Cal.
Gem—See Safety Tire Signal Co.
Harris Accessory Co., Greenville, S. C. (See page 79.)
Pardue, John L. (Wellston Sta.), St. Louis, Mo.
Safety Tire Signal Co., 655 12th St., Boulder, Colo. "Gem."
Terpening, E. A., Mokena, Ill.

AEROPLANES—See Section I

AGITATORS, MIXTURE—See Mixers, Fuel

AIR BAGS—See Bags, Steam Tire Curing

AIR BRAKES—See Brakes, Air

AIR CLEANERS—See Cleaners, Air

AIR COCKS—See Cocks, Spring Key; also Cocks, Pet

AIR COMPRESSORS—See Compressors, Garage Air

AIR GAGES—See Gages, Steam

AIR LINE TIRE CONNECTIONS—See Connections, Air System Tire

AIR MOISTENERS—See Moisteners, Air or Mixture

AIR NOZZLES—See Nozzles, Air Upholstery Cleaning

AIR PUMPS—See Pumps

AIR RELEASING TOOLS—See Tools, Tire Deflating

AIR STARTERS—See Starters, Compressed Air

AIR WASHERS—See Cleaners, Air

ALARMS, BOILER—See Columns, Water

ALARMS, Low Oil, for Fords

Handy Mfg. Co., 15 Library St., Grand Rapids, Mich.

ALCOHOL, Denatured

(For use in Radiators to prevent water freezing; for other Anti-Freezing Mixtures—See Compounds, Anti-Freezing)

Berg Industrial Alcohol Co., David, Ellicott Sq. Bldg., Buffalo, N. Y.
Jefferson Distilling & Denaturing Co. (Harvey), New Orleans, La. "Radico."
Kentucky Distillery & Warehouse Co., 56 Pine St., New York, N. Y. "Solox."
Phillips, C. F., Little Bldg., Lincoln, Neb.
Pyro—See United States Industrial Alcohol Co.
Radico—See Jefferson Distilling & Denaturing Co.
Solox—See Kentucky Distillery & Warehouse Co.
U. S. Industrial Alcohol Co., 27 William St., New York, N. Y. "Pyro."
Woolner Distilling Co., ft. Spillman St., Peoria, Ill.

ALIGNERS, RUNNING GEAR—See Gages, Wheel Aligning

ALIGNING FIXTURES, MAGNETO—See Fixtures, Magneto Aligning and Testing for Fords

ALIGNING GAGES—See Gages, Wheel Aligning

ALIGNING JIGS—See Jigs, Piston Aligning.

ALIGNING JIGS FOR FORDS—See Jigs, Connecting Rod Aligning

ALIGNING JIGS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALIGNING REAMERS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALLIGATOR WRENCHES—See Wrenches, Nut and Bolt

ALTERNATING CURRENT RECTIFIERS—See Rectifiers, Alternating Current

Everything is listed under the NOUN or principal word

E. A. Whitehouse Manufacturing Co.

EDWARD A. WHITEHOUSE, President

*Whitehouse High Speed Bearing Bronze Bars
Automobile Hardware*

AUTOSCOPE MIRRORS, SPRING SHACKLE BOLTS, WRIST PINS
and BUSHINGS OF SUPERIOR QUALITY FOR ALL MODEL CARS

42-54 Elm Street

Newark, New Jersey

"MORSE" Lighting Appliances

for

**Automobiles and
Motor Boats**

**Lamps, Switches, Sockets
Connectors, Adapters and
Wire**

**Largest Line
Largest Stock
Promptest Deliveries**

Send for Illustrated Catalogue

FRANK W. MORSE
289 Congress St., BOSTON, MASS.

The "Big Ben" of Motordom
HARRIS LO-PRESSURE

TIRELARM

The motor world heralds the advent of a new accessory that is destined for a notable career.

A precision instrument that goes on the valve stem like a dust cap affording a **VISIBLE, AUDIBLE SIGNAL** when the air in the tire becomes 10 or 12 pounds lower than the predetermined pressure.

It is the most important invention of the times and will find ready sale wherever shown.

Now ready for marketing through jobbers and dealers. Attractive sales literature, window cards, counter display stands and dealer helps supplied. Write for complete information.

HARRIS ACCESSORY CO.
Manufacturers and Distributors
Greenville, South Carolina

It Saves Tires

Ask Your Jobber Salesman to Show You CONTINENTAL SHOP EQUIPMENT

Look for this mark



Motor Stands
Axle Stands
Ford Engine Stands
Battery Stands
Radiator Stands
Assembly Tables
Welding Tables
Creepers
Parts Trays
Piston Aligning Devices

Piston Vises
Transmission Band Riveting Jigs
Burning-in Machines
Garage Jacks
Industrial Trucks
Wrecking Trucks
Bushings Presses
Crank Shaft Straightening Presses
Cam Shaft Straightening Presses

CATALOG ON REQUEST

CONTINENTAL AUTO PARTS CO.
1807 East 17th St.

Columbus, Ind., U. S. A.

Please mention The Automobile Trade Directory

AIRTIMETERS, Aircraft*(See also Barometers; also Barographs)*

Schneider Bros. Instrument Co., 350-52 Pallsade Ave., Jersey City, N. J.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.)
(See page 253.)

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

ALTITUDE INDICATING BAROMETERS

—See Barometers, Altitude Indicating

ALUMINUM CASTINGS—See Castings, Aluminum**ALUMINUM MATTING—See Matting, Aluminum****ALUMINUM PAINTS—See Paints, Aluminum****ALUMINUM, Sheet and Rod***(For Aluminum Castings—See Castings, Aluminum; for Aluminum Tubing—See Tubing, Aluminum)*

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

U. S. A.—See United Smelting & Aluminum Co.
United Smelting & Aluminum Co., 182-89 Commerce St., New Haven, Conn. "U. S. A."**ALUMINUM SOLDER—See Solder, Aluminum****ALUMINUM TUBING—See Tubing, Aluminum****AMBULANCES, WRECKING—See Trucks, Castors and Spare Wheels, Wrecking****AMMETERS and VOLTMETERS, Standard***(For Switchboard and Electric Vehicle use; for Pocket, Cowl or Dash Board Meters—See Gages, Battery)*

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Co., Fenacock, N. H.) (See page 81.)

General Electric Co., Schenectady, N. Y. (See page 779.)

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Hickok Electrical Instrument Co., Cleveland, O.

Hoyt Electrical Instrument Co.—See Burton-Rogers Co.

Imp.—See Roller-Smith Co.

Jewell Electrical Instrument Co., 1648 Walnut St., Chicago, Ill.

Keystone Electrical Instrument Co., Wayne & Windrim Aves., Philadelphia, Pa.

Norton Electrical Instrument Co., Manchester, Conn.

Pignolet, Louis M., 78 Cortlandt St., New York, N. Y.

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Reliance Instrument Co., 1185 W. Van Buren St., Chicago, Ill.

Roller-Smith Co., 9 Barclay St., New York, N. Y. "Imp." (See page 425.)

Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J.
(See page 81.)**ANGLE BENDERS—See Benders, Angle****ANGLE STEEL—See Steel, Angle****ANGULAR BELTS—See Belts, V****ANNEALING—See Treating, Heat****ANNEALING FURNACES—See Furnaces, Annealing****ANNEALING AND HEAT TREATING—See Treating, Heat****ANNUNCIATORS, Automobile***(For Signaling from passenger to driver. For Speaking Tubes—See Tubes, Speaking; for Limousine Telephones—See Telephones, Limousine)*

Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Velvet-Grip."

Velvet-Grip—See Mil-Mac Mfg. Co.

ANTI-DRAFT SHIELD — See Visors and Rainshields, Top**ANTI-FREEZE, RADIATOR—See Alcohol, Denatured; also Compounds, Anti-Freezing****ANTI-FREEZING SOLUTION—See Alcohol, Denatured; also Compounds, Anti-Freezing****ANTI-FRICTION METAL — See Metals, Bearing****ANTI-RATTLERS, Brake Rod Clevis, for Fords***(See also Supports, Brake Rod)*

Afa Specialty Co., 24 Southbridge St., Worcester, Mass.

American Auto Products Co., 1319 L St. N. W., Washington, D. C. "Little Giant."

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for U. S. Automatic Spring Co., Napoleon, O.) "Superior."

Little Giant—See American Auto Products Co.

Superior—See Jessop & Thompson.

U. S. Automatic Spring Co.—See Jessop & Thompson.

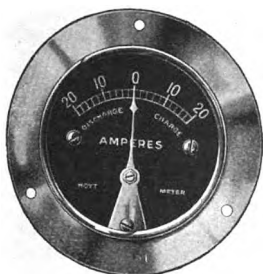
ANTI-RATTLERS, Door*(Rubber or Spring Bumpers to prevent the rattling of Car Doors)*

Atwood Vacuum Machine Co., 130 N. Water St., Rockford, Ill.

Autoquip Mfg. Co., Rochester, N. Y.
(See page 761.)

Everything is listed under the NOUN or principal word

HOYT Dashboard Ammeters



Type 501

Built Right Sold Right

Ask Your Jobber

**We Build a Complete Line
of**

**Portable and
Switchboard
Meters for the
Automotive
Industry. . . .**

Catalog Supplied on Request

BURTON-ROGERS COMPANY

Sales Department

755 Boylston Street, Boston, Mass.

Buffalo Cleveland Baltimore Philadelphia Atlanta

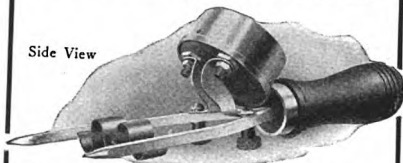
J. L. Madsen, New York

H. Jorgensen & Co., Chicago

Weston

Model 453

Heavy Discharge Battery Tester



Side View

Intended for testing the voltage of each cell of the battery while a relatively heavy current is flowing.

It consists of a well-designed, substantial prod upon which is mounted a direct-current Voltmeter having a range of 3-0-3 volts. The prod has two prongs securely fastened in a wooden handle, which are spaced so that they can be pressed into the cell terminals of the standard automotive batteries. Connected between the prongs is a special alloy conducting strip of approximately 0.01 ohm resistance, through which approximately 200 amperes will flow when 2 volts is applied across the prod. The Voltmeter is Weston Model 301, with a legible and easily-read scale. Instrument and prod furnished in nickel finish only.

For the Dashboard or Cowl

**of Car
or Truck**

Model 354

Ammeter

tells instantly and accurately the exact charge or discharge rate of current flow and promptly detects loss of current due to short circuits or grounds.

Also:
Battery Testing Voltmeter—Model 443
Takes exact measurements of the E. M. F. of individual cells. Also provides for the cadmium test.

"Fault Finder"—Model 441

A general utility instrument. Makes every test except measuring starting current or making short-circuit test on armatures. Has separate voltmeter and ammeter—cables for plugging into instrument—clip terminals to quickly connect to circuits. Ammeter protected by replaceable fuse to prevent burn-outs.

Prompt Shipments From Stock. Write Us.

Weston Electrical Instrument Company
16 Weston Avenue Newark, N. J.

Branches in All Principal Cities

Please mention The Automobile Trade Directory

ANTI-RATTLERS, Door (Continued)

Bailey Co., W. J., Newark, N. J. "C. B."
 C. B.—See Bailey Co.
 Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.
 Cleveland National Machine Co., 1266 W. 70th St., Cleveland, O.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S."
 Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)
 Frantzen—See Williams, Franklin.
 Little B-R-A-T-S—See Fernald Mfg. Co.
 Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.
 Ollard, James & Wm., 964 E. Third St., Willsport, Pa. "S-O."
 Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
 Rostand Mfg. Co., Milford, Conn.
 S-O—See Ollard, James & Wm.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Stadco—See Staderker Metal Specialty Co.
 Staderker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
 Ten Elck, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Teranstedt Mfg. Co., Artillery & Munster Ave., Detroit, Mich. (See page 785.)
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.
 Williams, Franklin, 251 Jefferson St., Newark, N. J. "Frantzen."
 (See page 83.)

ANTI-RATTLERS, Door, for Fords

(Rubber or Spring Bumpers to prevent rattling of car doors)

Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S."
 Little B-R-A-T-S—See Fernald Mfg. Co.
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."

ANTI-RATTLERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard**ANTI-RATTLERS, OVERHEAD VALVE—See Silencers, Overhead Valve****ANTI-RATTLERS, Radius Rod, for Fords**

(Adjustable cap to take place of solid cap on end of radius rod to permit taking up wear and so prevent rattling)

Apco Mfg Co., 703 Eddy St., Providence, R. I.
 Dennis Shock Absorber Co., Waukesha, Wis.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Peru Brass & Mfg. Co., Peru, Ind.

ANTI-RATTLERS, Spark and Throttle Rod, for Fords

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

ANTI-RATTLERS, Spindle Arm, for Fords

(Small steel springs to place between spindle arm cross yoke end to prevent rattling)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Dunham Co., Thomas, Aurora, Ill. (See page 163.)
 Eclipse Machine Co., Elmira, N. Y. (See page 163.)
 Krauter & Co., Newark, N. J. (See page 1001.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Sanborn Mfg. Co., J. W., Hampstead, N. H.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

ANTI-RATTLERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column**ANTI-RATTLERS, Steering Rod, for Fords**

(Adjustable spring cap to take place of solid cap on end of steering rod to permit taking up wear and so prevent rattling)

American Auto Products Co., 240-44 S. Broadway, Denver, Colo. "Little Giants."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 B. A. T. Co., Germantown & Stanton Aves., Philadelphia, Pa. "Panther."
 Fernald Mfg. Co., North East, Pa. "Steer-Aid."
 Handy Mfg. Co., 15 Library St., Grand Rapids, Mich.
 Humboldt—See Republic Auto Parts Co.
 Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for U. S. Automatic Spring Co., Napoleon, O.) "Superior."
 Little Giants—See American Auto Products Co.
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Panther—See B. A. T. Co.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
 S & H Anti Rattler Co., Liverpool, Pa.
 Steer-Aid—See Fernald Mfg. Co.
 Superior—See Jessop & Thompson.
 Towle Mfg. Co., Portland, Me.
 U. S. Automatic Spring Co.—See Jessop & Thompson.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

Everything is listed under the NOUN or principal word



The Mark of Dependability

Manufacturers of
Ignition Repair Parts
Starting and Lighting Brushes
Magneto and Generator Couplings
Contact and Brush Assortment Cabinets

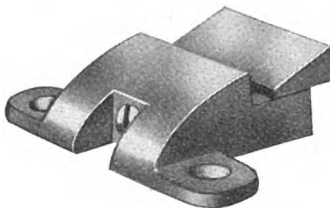
Marketed by the
 Discriminating Trade

Write for Catalog "I"

A. NELSON MFG. COMPANY
 2700 Southport Ave.
 CHICAGO

FRANZEN Adjustable Striking Plate

(Patent Pending)



A POSITIVE AND ADJUSTABLE
 • ANTI - RATTLER FOR
 AUTOMOBILE DOORS

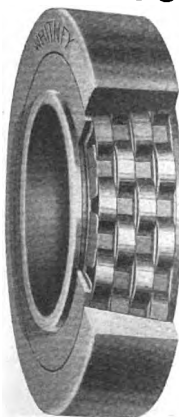
FRANKLIN WILLIAMS, Inc.

(OF N. J.)

251 Jefferson St.

Newark, N. J.

WHITNEY (PARALLEL) ROLLER BEARINGS



Some Exclusive and Incomparable Features Distinctive of the Whitney (Parallel) Roller Bearing

The Keystone principle, as applied to roller bearings, transmit all loads, either thrust or side, directly to the face of the rollers only, as well as vertical to their axis constitutes the most recent development in modern anti-friction roller bearings guaranteeing possibilities never before realized.

The old and famous Keystone principle is employed and thoroughly practical.

The parallel roller principle is a fundamental factor. Greater speed under a heavy load is possible.

Cage friction is reduced to negligible quantity.

May be safely guaranteed during the life of any car.

The rollers have no tendency to work out from under the load.

All of the rollers are in contact with the bearing members all of the time.

Self-adjustment is safe, perfectly accurate and automatic at all times.

The load never touches the ends of the rollers.

The rollers have no tendency to work endwise under a load.

All the load rests on the cylindrical face of the rollers only, vertical to the axis of the rollers.

The rollers cannot jam, wedge or get locked.

Complete Data Upon Request



Roller Assembly

WHITNEY BEARING CORPORATION
 CHICAGO, ILLINOIS
 536 LAKE SHORE DRIVE

Please mention The Automobile Trade Directory

ANTI-SKIDS, TIRE—See Bands, Non-Skid Truck

ANTI-SQUEAK, BODY—See Lining, Body or Frame

ANVILS, Rim

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

APPLIERS, SKID-CHAIN—See Tools, Tire Chain Attaching

APRONS, Wash

Accurate Cover Co., 373 Canal St., New York, N. Y.

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Defiance Welding Co., Defiance, O. "Boko.")

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Beardsley & Haft Co., Columbus, O. "Slip-In." (See page 393.)

Bemco—See B. E. Mfg. Co.

Boko—See Bailey-Drake Co.

Boston Woven Hose & Rubber Co., Cambridge, Mass.

Co-Zee—See Omaha Auto Top Co.

Defiance Welding Co.—See Bailey-Drake Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 763-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Esco—See Economy Seal Co.

Fitwell—See Bailey-Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Goodyear Rubber Co., 787 Broadway, New York, N. Y.

Hodes-Zink Mfg. Co., 212 W. State St., Fremont, O. "Sure-Fit."

Lockwood Mfg. Co., Kansas City, Mo. (See page 985.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitwell."

Omaha Auto Top Co., 709-11 S. Ninth St., Omaha, Nebr. "Co-Zee."

Powers Mfg. Co., Waterloo, Ia. (See page 581.)

Slip-In—See Beardsley & Haft Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."

ARBOR PRESSES—See Presses, Arbor

ARBORS, EXPANDING—See Mandrels, Expanding

ARCH BARS—See Supports, Hood

ARCH PUNCHES—See Punches, Arch and Washer

ARMATURE WINDINGS—See Windings, Starter and Ignition

ARRESTERS, Tractor Spark

Yuba Mfg. Co., Marysville, Cal.

ARTIFICIAL LEATHER—See Leather, Artificial

ARTILLERY WHEELS—See Wheels, Wood

ASBESTOS BRAKE LINING CUTTERS—See Cutters, Brake Lining

ASBESTOS GASKETS—See Packing, Asbestos

ASBESTOS PACKING—See Packing, Asbestos

ASBESTOS, Sheet

(For Asbestos Packing—See Packing, Asbestos)

Ambesco—See American Asbestos Co.

American Asbestos Co., Norristown, Pa. "Ambesco." (See page 581.)

Autobestos—See Keasbey & Mattison Co.

Dugas-Hundley Corp., 29 W. 24th St., New York, N. Y. "Reliance."

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Autobestos."

Norristown Magnesia & Asbestos Co., Norristown, Pa.

Reliance—See Dugas-Hundley Corp.

Watson Co., H. F., Erie, Pa.

ASH RECEIVERS—See Receptacles, Ash

ASSEMBLIES, WIRING, FOR FORDS—See Sets, Wiring

ASSEMBLING CLAMPS FOR FORDS—See Clamps, Transmission Band Assembling

ASSEMBLY PLATES FOR FORDS—See Plates, Differential Assembly

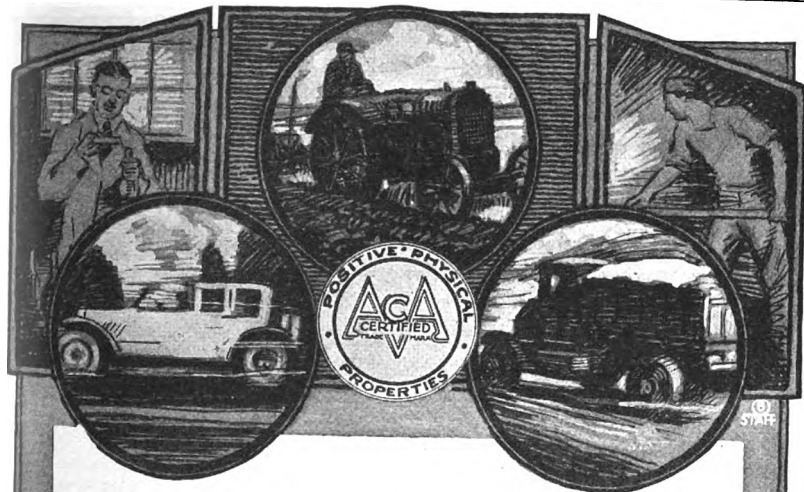
ASSOCIATIONS AND SOCIETIES

(Comprising only Associations and Societies advertising in this publication)

American Malleable Castings Association, 1900 Euclid Bldg., Cleveland, O. (See page 85.)

Automotive Wood Wheel Manufacturers' Association, 105 W. Monroe St., Chicago, Ill. (See page 500.)

Everything is listed under the NOUN or principal word



Battling With Wear And Tear

Members Receiving Certificates for Quarter Ending Dec. 31, 1920

American Malleable Castings Co.	Marion, Ohio
American Malleable Co.	Lancaster, N. Y.
Belle City Malleable Iron Co.	Racine, Wis.
Chain-Belt Co.	Milwaukee, Wis.
Chicago Malleable Castings Co.	West Pullman, Chicago, Ill.
Columbus Malleable Iron Co.	Columbus, Ohio
Danville Malleable Iron Co.	Danville, Ill.
Dayton Malleable Iron Co.	Dayton, Ohio
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co.	Naugatuck, Conn.
Bridgeport Malleable Iron Works	Bridgeport, Conn.
Troy Malleable Iron Works	Troy, N. Y.
Wilmington Malleable Iron Works	Wilmington, Del.
Verdean Iron Works	New Britain, Conn.
Eric Malleable Iron Co.	Erie, Pa.
Federal Malleable Co.	West Alle, Wis.
Fort Pitt Malleable Iron Co.	Pittsburgh, Pa.
Fraser & Jones Co.	Syracuse, N. Y.
Globe Malleable Iron & Steel Co.	Syracuse, N. Y.
Haskell & Barker Car Co.	Michigan City, Ind.
Illinois Malleable Iron Co.	Chicago, Ill.
Iowa Malleable Iron Co.	Fairfield, Iowa
Kalamazoo Malleable Iron Co.	Kalamazoo, Mich.
Lacoma Car Co.	Laconia, N. H.
Marion Malleable Iron Works	Marion, Ind.
National Malleable Castings Co.	Cleveland, Ohio
Northern Malleable Iron Co.	St. Louis, Ill.
Northwestern Malleable Iron Co.	Toledo, Ohio
Pittsburgh Malleable Iron Co.	Milwaukee, Wis.
Pressed Steel Car Co.	Pittsburgh, Pa.
Rhode Island Malleable Iron Works	McKees Rocks, Pa.
Rockford Malleable Iron Works	Hillgrove, R. I.
Roop-Meehan Foundry	Rockford, Ill.
St. Louis Malleable Castings Co.	Chattanooga, Tenn.
Standard Malleable Castings Co.	St. Louis, Mo.
Stowell Co.	Terre Haute, Ind.
T. H. Symington Co.	South Milwaukee, Wis.
Terre Haute Malleable & Mfg. Co.	Rochester, N. Y.
Timken-Detroit Axle Co.	Terre Haute, Ind.
Trenton Malleable Iron Co.	Canton, Ohio
Union Malleable Iron Co.	Trenton, N. J.
Vermilion Malleable Iron Co.	E. Moline, Ill.
Wagner Malleable Iron Co.	Hopkinton, Ill.
Wheeler Malleable Iron Co.	Hammond, Ind.
Yonkers Manufacturing Co.	Milwaukee, Wis.
Zanesville Malleable Co.	York, Pa.
	Zanesville, Ohio

Any serious complaint as to quality of Malleable Iron furnished by any of the firms listed will be rigidly investigated if brought to the attention of the Association.

IN those motor driven vehicles which constantly "come through" in the grim battle with unbroken country, Certified Malleable Iron Parts are as a rule strongly in evidence.

The Certified product is the result of many years of research work by The American Malleable Castings Association and bears its endorsement.

CERTIFIED MALLEABLE CASTINGS

The American Malleable Castings Association

THE 1900 EUCLID BUILDING

Cleveland, Ohio

Please mention The Automobile Trade Directory

ATTACHMENTS, DUMMY FRAME, FOR FORDS—See Extensions, Dummy Frame

ATTACHMENTS, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

ATTACHMENTS, Lathe Crankshaft Turning

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

ATTACHMENTS, Lathe Cylinder Grinding

Acme—See Continental Grinder Co.

Britton, Arthur T., 590 S. First St., San Jose, Cal. "W & B."

Continental Grinder Co., 2848 Fremont Ave., S., Minneapolis, Minn. "Acme."

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

W & B—See Britton, Arthur T.

Wood & Safford Machine Works, 13th St., Great Falls, Mont.

ATTACHMENTS, Lathe Milling

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Davis—See Hincley Machine Works.

Hincley Machine Works, E. Lincoln Ave., Hincley, Ill. "Davis."

Paschall Tool Co., Long Beach Bank Bldg., Long Beach, Cal.

Stark Tool Co., 218 Moody St., Waltham, Mass.

ATTACHMENTS, Magneto Mounting, for Fords

(Bracket and gear housing for attaching to Ford Motor to permit of the installation of any standard make of magneto)

American Bosch Magneto Corp., (Brightwood), Springfield, Mass.

Magneto Attachment Co., 3608 Park Ave., New York, N. Y. "Matco."

Matco—See Magneto Attachment Co.

ATTACHMENTS, MOTOR—See Wheels, Motor

ATTACHMENTS, Power Transmitting

(Attachment to permit of the use of the car motor for general power purposes)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

Elmberg Co., E. F., Beaver Valley Bank Bldg., Parkersburg, Ia. "Elmco."

Elmco—See Elmberg Co.

Lay Porta Power—See Young Industries.

Young Industries, L. A., 9200 Russell St., Detroit, Mich. "Lay Porta Power."

ATTACHMENTS, Power Transmitting, for Fords

(Attachment to permit of the use of the car motor for general power purposes)

Andrew Motor Mfg. Co., 532-51 30th St., Milwaukee, Wis.

Ashland Products Co., 50 E. Ninth St., Ashland, O. (See page 539.)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

BB—See Bayne Mfg. Co.

Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 609.)

Fremont Foundry & Feed Mill Co., Oklahoma City, Okla.

Hickey, D. S., 40 Inley Rd., Boston, Mass.

Ita Manufacturers, Glen Ellyn, Ill.

McCargar Mfg. Co., L. B., 420 Delaware Ave., Kansas City, Mo.

Shaw, Welsh & Co., Galesburg, Ill.

Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.

Star—See Winters, E. B.

Winters, E. B., Coffeyville, Kans. "Star."

ATTACHMENTS, STEERING GEAR—See Checks, Steering Gear

ATTACHMENTS, Tilting Wheel for Fords

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind. "Wheeltilts."

Wheeltilts—See Warner Electric Co.

ATTACHMENTS, TIMER ELEVATING, FOR FORDS—See Brackets, Timer Elevating

ATTACHMENTS, TRACTOR, FOR FORDS—See Converters, Chassis

ATTACHMENTS, TRUCK—See Converters, Chassis

AUTOGENOUS WELDING—See Welding, Autogenous

AUTOGENOUS WELDING MACHINES—See Machines, Autogenous Welding

AUTOGRAPHIC REGISTERS—See Registers, Autographic and Manifold

AUTOMATIC AIRPLANE IGNITION INTERRUPTERS—See Interrupters, Automatic Airplane Ignition

AUTOMATIC CRANK RELEASERS FOR FORDS—See Cranks, Safety Starting

AUTOMATIC DISENGAGING TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

Everything is listed under the NOUN or principal word

SOUND DESIGN

BETTER IN EVERY DETAIL

LIGHT WEIGHT



BEST MATERIALS
GOOD WORKMANSHIP

THE U. S. AXLE CO.
POTTSTOWN, PA.

RUGGED STRENGTH
MINIMUM POWER LOSS

ADAMS AXLES

Represent Advanced
Thought In
Axle Construction

Quality

Service

THE ADAMS AXLE CO.

Findlay, Ohio

Detroit Office: 1401 Kresge Building
W. D. Rockwell, Mgr.

A

TRAILER AXLES

Equipped with Hubs and
Fitted with
Timken Roller Bearings

ALL SIZES

1¼ inch to 3½ inch square
stocked, Rectangular and Round
made up on contract, any track
desired.

*Contract
Machine
Work*

The Auto Engineering Co.
1535 Temple Ave.
Detroit, Mich.

PERU AUTO PARTS MFG. CO.

Manufacturers of

AUTOMOBILE

Front and Rear Axles

PERU, IND.

Please mention The Automobile Trade Directory

AUTOMATIC DUMPING BODIES, FOR FORDS—See Bodies, Automatic Dumping

AUTOMATIC GEAR SHIFTERS—See Shifters, Automatic Gear

AUTOMATIC HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

AUTOMATIC HOSE REELS—See Reels, Automatic Hose

AUTOMATIC QUICK STOP TRACTOR HITCHES—See Hitches, Automatic Quick Stop Tractor

AUTOMATIC RADIATOR COVERS—See Shutters, Automatic Radiator

AUTOMATIC RADIATOR SHUTTERS—See Shutters, Automatic Radiator

AUTOMATIC REELS—See Reels, Automatic Extension Lamp

AUTOMATIC RELEASE CLEAVES—See Hitches, Automatic Tractor Release

AUTOMATIC SCREW MACHINES—See Machines, Screw

AUTOMATIC SPARK RETARDERS FOR FORDS—See Retarders, Automatic Spark

AUTOMATIC TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

AUTOMOBILES, GASOLINE, STEAM AND ELECTRIC—See Section I

AUTOMOBILES, Second Hand, Dealers in

M. & M. Co., 100-23 W. 64th St., New York, N. Y. (See page 35.)

AUXILIARY AIR VALVES—See Mixers, Fuel

AUXILIARY SPRINGS—See Springs, Supplementary

AUXILIARY TRACTOR CONTROLS—See Controls, Auxiliary Tractor

AUXILIARY TRANSMISSION GEARS FOR FORDS—See Gears, Auxiliary Transmission

AUXILIARY WIND SHIELDS—See Shields, Auxiliary Wind.

AVIATORS' CLOTHING—See Clothing, Aviators'; also Clothing, Electrically Heated Aviators

AVIATORS' GLOVES—See Gloves and Mittens, Aviators'

AVIATORS' MITTENS—See Gloves and Mittens, Aviators'

AVIATORS' PUTTEES—See Puttees, Aviators'

AXES, Motorists'

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Bur-Nor—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "Bur-Nor."
(See page 627.)

AXLE BEARING SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

AXLE BENDERS—See Bars, Axle Straightening

AXLE BUSHINGS FOR FORDS—See Bushings, Bronze

AXLE END MILLS—See Mills, Steering Knuckle Bushing, for Fords

AXLE ENDS—See Forgings, Drop

AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

AXLE HOUSING PULLERS FOR FORDS—See Pullers, Axle Housing

AXLE SHAFTS—See Shafts, Rear Axle

AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

AXLE STRAIGHTENING BARS—See Bars, Axle Straightening

AXLE TAPER SHIMS FOR FORDS, REAR—See Shims, Rear Axle, Taper

AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

AXLES, EMERGENCY REAR FOR FORDS—See Spindles, Emergency Rear Axle for Fords

AXLES, Front

(Finished or Machined Axles; for Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O.
(See page 87.)

Anchor—See Sheldon Axle & Spring Co.
Cameron Motors Corp., 2 Columbus Circle, New York, N. Y.

Columbia Axle Co., Cleveland, O.
(See Page 89.)

Continental Axle Co., Edgerton, Wis.
D A C—See Dunkirk Axle Corp.

Dunkirk Axle Corp., Dunkirk, N. Y.
"D A C." (See page 245.)

Eaton—See Standard Parts Co.
Flint Motor Axle Co., Flint, Mich.
(See page 91.)

Everything is listed under the NOUN or principal word

COLUMBIA

ONE-PIECE-HOUSING
AXLES



Safe!—Thanks to what?

A CITY STREET at a quiet noon. All clear ahead—rushing to make a train.

Then from a side street an absent-minded car noses into your path. A sudden sharp turn; wheels locked, a half-circle skid and you bring up against the curb.

Safe!

Thank the brakes. Thank the wheels. But most of all, thank the rear axle, for it *held* the brakes and the wheels, it resisted the impact of the curb, it withstood the antagonistic twistings and turnings of terrific forces exerted simultaneously; and it was ready to deliver the engine's power the moment you were ready to go on again.

Vitality important—the rear axle—no other part of the car has such a multitude of duties or so many antagonistic forces to resist. Wouldn't you say it deserved the whole attention of an organization of specialists?

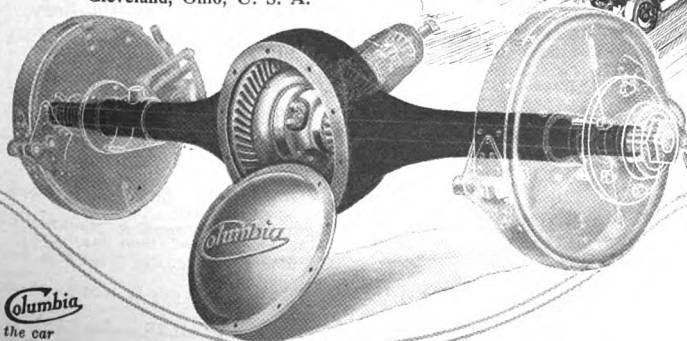
We believe so. From the beginning of our association, we have acted on this belief. We have devoted all our energies, our thought, our resources to the building of axles.

The result is that there is not an incident that can occur in motoring which affects the axle that we have not endeavored to foresee and prepare for. Therefore, the owner of a car equipped with a Columbia One-piece-housing Rear Axle has a feeling of unusual confidence and comfort.

The Columbia trade-mark appears on the plate covering the differential housing—look for it.

Columbia Axle Company
Cleveland, Ohio, U. S. A.

THE Columbia Rear Axle Housing is built in one piece, which our tests show adds 50% to its torsional strength. Extra large and strong brake drums, differential and driving shafts complete the distinctive strength and safety of the Axle as a whole. Columbia Front Axles are equally strong and safe.



Look for 
under the car

Please mention The Automobile Trade Directory

AXLES, Front (Continued)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
 Higgins Spring & Axle Co., Racine, Wis. "Quality."
 Ladish Drop Forge Co., Cudahy, Wis. (See page 537.)
 Lewis Spring & Axle Co., 43 Hollier St., Chelsea, Mich.
 Peru Auto Parts Mfg. Co., Peru, Ind. (See page 87.)
 Quality—See Higgins Spring & Axle Co.
 Russel Motor Axle Co., North Detroit, Mich.
 Salisbury Axle Co., Jamestown, N. Y. (See page 1078.)
 Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor."
 Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Stan-Par—See Standard Parts Co.
 Standard Parts Co., Cleveland, O. "Stan-Par," "Eaton." (See page 283.)
 Timken-Detroit Axle Co., 100-320 Clarke Ave., Detroit, Mich.
 Torbensen Axle Co., E. 152d St., Cleveland, O.
 U. S. Axle Co., Pottstown, Pa. (See page 87.)
 Vulcan Motor Axle Corp, 7881 Conant Rd., Detroit, Mich. (See page 93.)
 Wisconsin Gear & Axle Co., State St. & Hawley Rd., Wauwatosa, Wis.

AXLES, Rear

(Complete Rear Axle Units; for Axle Parts—See Specific Article)

Adams Axle Co., Findlay, O. "Simplex." (See page 87.)
 Anchor—See Sheldon Axle & Spring Co.
 Atlas Axle Co., Lowell, Ind.
 Bridgeport Engineering Co., Bridgeport, Conn.
 Cameron Motors Corp., 2 Columbus Circle, New York, N. Y.
 Central Axle Co., Holbrook & G. T. R. R., Detroit, Mich.
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Chicago Standard Axle Co., Monroe Bldg., Chicago, Ill. "Standard."
 Clark Equipment Co., Buchanan, Mich.
 Columbia Axle Co., Cleveland, O. (See page 89.)
 Continental Axle Co., Edgerton, Wis.
 Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 645.)
 D A C—See Dunkirk Axle Corp.
 Dunkirk Axle Corp., Dunkirk, N. Y. "D. A. C." (See page 245.)
 Eaton—See Standard Parts Co.
 Edwards Valve & Mfg. Co., E. Chicago, Ind.
 Flint Motor Axle Co., Flint, Mich. (See page 91.)
 Hero Mfg. Co., 33rd & Westmoreland Sts., Philadelphia, Pa. "Kennedy."
 Hindley Gear Co., 1105 Frankford Ave., Philadelphia, Pa.
 Iron Mountain Co., 927 E. 95th St., Chicago, Ill.
 Kennedy—See Hero Mfg. Co.
 Kenosha Wheel & Axle Co., Kenosha, Wis.
 Keystone-Hindley Gear Co., 30th St. & Indiana Ave., Philadelphia, Pa.
 L. M. Axle Co., 231 Colonial Arcade, Cleveland, O.

Lewis Spring & Axle Co., 43 Hollier St., Chelsea, Mich.
 National Axle Co., Benton Harbor, Mich.
 Parker Axle & Product Corp., Gotham National Bank Bldg., New York, N. Y.
 Peru Auto Parts Mfg. Co., Peru, Ind. (See page 87.)
 Russel Motor Axle Co., North Detroit, Mich.
 Salisbury Axle Co., Jamestown, N. Y. (See page 1078.)
 Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor."
 Simplex—See Adams Axle Co.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Stan-Par—See Standard Parts Co.
 Standard—See Chicago Standard Worm Drive Axle Co.
 Standard Parts Co., Cleveland, O. "Stan-Par," "Eaton." (See page 283.)
 Thompson, James & Co., 516 Fifth Ave., New York, N. Y.
 Thomson Press Co., John, 253 Broadway, New York, N. Y.
 Timken-Detroit Axle Co., 100-320 Clarke Ave., Detroit, Mich.
 Torbensen Axle Co., E. 152d St., Cleveland, O.
 U. S. Axle Co., Pottstown, Pa. (See page 87.)
 Vulcan Motor Axle Corp, 7881 Conant Rd., Detroit, Mich. (See page 93.)
 Walker Axle Co., 72 W. Adams St., Chicago, Ill.
 Wisconsin Gear & Axle Co., State St. & Hawley Rd., Wauwatosa, Wis.
 Wisconsin Parts Co., Oshkosh, Wis.

AXLES, REAR, FOR FORDS—See Axles, Worm Drive, Rear

AXLES, Special Trailer

(Finished or Machine Tractor Axles; for Trailer Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O. (See page 87.)
 American Axle Co., 12th St. & Montgomery Ave., Philadelphia, Pa.
 Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 87.)
 Concord Axle Co., Penacook, N. H.
 Continental Axle Co., Edgerton, Wis.
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Flint Motor Axle Co., Flint, Mich. (See page 91.)
 Martin Rocking Fifth Wheel Co., P. O. Box 1244P, Springfield, Mass. (See page 1055.)
 Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.

AXLES, Tractor

(See also Axles, Front; also Axles, Rear)

Adams Axle Co., Findlay, O. (See page 87.)
 Flint Motor Axle Co., Flint, Mich. (See page 91.)
 Milwaukee Forge & Machine Co., Milwaukee, Wis. (See page 433.)
 Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.
 Torbensen Axle Co., E. 152d St., Cleveland, O.

AXLES, TRAILER—See Axles, Special Trailer

Everything is listed under the NOUN or principal word



Will You Cut Costs or Quality to Sell Your 1921 Light Truck?

If you are maintaining quality while cutting costs, you will be glad to have Flint Axles; and we will give you all our considerable help to produce a low-priced valuable light truck.

We have cut costs by the strictest watchfulness against waste of any kind. By operating our own drop-forge plant we have eliminated an item you must otherwise pay.

Flint Axles for trucks to two tons enable you to cut the price of your product without sacrifice of performance, loss of profit, or jeopardy of reputation. Ask for estimates and particulars.

FLINT MOTOR AXLE CO.
FLINT, MICHIGAN

Please mention The Automobile Trade Directory

AXLES, Worm Drive Rear, for Fords

McIntyre Motor Products Co., 5711 Wentworth Ave., Chicago, Ill.

BABBITT BEARINGS—See Metals, Bearing**BABBITT-LINED BRONZE BEARINGS—**
See Bearings and Bushings**BABBITT-LINED BRONZE BUSHINGS—**
See Bearings and Bushings**BABBITT MELTING FURNACES—See**
Furnaces, Babbitt Melting**BABBITT METAL—See Metals, Bearing****BABBITTING JIGS—See Jigs, Main Bearing**
Connecting Rod Babbitting**BABY HAMMOCKS—See Hammocks, Baby****BACK RESTS—See Rests, Cushion Back;**
also Rests, Motorcycle Back**BACKS, Metal Seat**

(For Wood Seat Backs—See Bindings, Wood)

American Automobile Accessories Co., 1700

Blue Rock St., Cincinnati, O. "3 A."

Corwall Mfg. Co., Cleveland, O.
(See page 937.)

Mullins Body Corp., 182 Franklin Ave., Salem, O.

Sheet Steel Products Co., Bryan, O.

3A—See American Automobile Accessories Co.

BAGS, Coat Rail

(Small Fabric or Leather Bags to be hung on Ribs or Coat Rails for carrying gloves, goggles or other articles)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

Powers Mfg. Co., Waterloo, Ia.
(See page 581.)

BAGS, GAS—See Bags, Rubber Gas**BAGS, GREASE—See Boots, Steering**
Knuckle**BAGS, INNER TUBE—See Cases, Tire****BAGS, Luggage, for Fords**

(For attaching to back of front seats)

Atlas Specialty Mfg. Co., 16-22 E. 24th New York, N. Y. (See page 307.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

BAGS, MAILING—See Bags, Shipping**BAGS, ROBE RAIL—See Bags, Coat Rail****BAGS, Rubber Gas**

(Small Rubber Bags to be attached to Acetylene Head Lights to equalize the flow of gas to the lamp and prevent sputtering)

Davol Rubber Co., Providence, R. I.

Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

BAGS, Shipping

Ames Bag Machine Co., 5406 Euclid Ave., Cleveland, O. "Amesacks."

Amesacks—See Ames Bag Machine Co.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo. "Two-in-one."

Bull Dog—See National Bag Co.

Central Bag Mfg. Co., 3622-30 Iron St., Chicago, Ill.

Chase Bag Co., 4-26 N. Main St., St. Louis, Mo. Cleveland-Akron Bag Co., Cleveland, O. (See page 97.)

Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.

Milwaukee Bag Co., 206-20 S. Water St., Milwaukee, Wis. "Red Top."

National Bag Co., 71 Washington St., Naperville, Ill. "Bull Dog."

National Mailing Device Co., Manhattan Bldg., Kansas City, Mo.

Red Top—See Milwaukee Bag Co.

Specialty Bag Co., 3007 Fulton St., Brooklyn, N. Y.

Troy Sun Shade Co., 141 Garfield Ave., Troy, O. Two-in-one—See Bemis Bro. Bag Co.

BAGS, Steam Tire Curing

Alsteel Ridewell Tire & Rubber Co., Lindsey Bldg., Dayton, O.

American Rubber & Tire Co., 100 Beech St., Akron, O.

K. A. R. Rubber Co., 110 W. Tenth St., West New York, N. J.

Perpetual Air Bag Co., 2103 S. Michigan Ave., Chicago, Ill. (See page 307.)

Steam Bag Corp., 1545-47 Broadway, Denver, Colo. "20th Century."

20th Century—See Steam Bag Corp.

BAGS, TUBE—See Covers, Spare Tire**BAGS or ROLLS, Tool**

(For Tool Boxes—See Boxes, Tool)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.

Campbell—See Perkins-Campbell Co.

Everything is listed under the NOUN or principal word

Vulcan Motor Axles

In your present-day source of axle supply you demand dependability of supply, the most modern scientific design, manufacture of utmost precision and economy, and co-operation and courtesy in business relations.

There is a built-in balance of these essentials in the organization of the Vulcan Motor Axle Corporation.

A new factory equipped with the most approved machinery and time and labor saving devices is in production on 1½, 2½ and 3½ ton sizes. Manufacturers and engineers are invited to avail themselves of our service, whether to obtain drawings and specifications of our production models or to receive the co-operation of our engineers in developing a particular type for your needs.

Standard practices are adhered to in all Vulcan Products.

A visit to the Vulcan factory will show you the latest and most efficient methods of axle manufacture. You are assured of a safe, satisfactory source of supply.

Vulcan Motor Axle Corporation

7881 Conant Road
DETROIT

F. C. GILBERT, President and Treasurer
SIDNEY C. LOVE, Vice-President
C. C. MILLER, Vice-President

JOHN T. HANLON, Secretary
R. G. BEECHLER, Chief Engineer
CHARLES L. DAVIS, Superintendent

Please mention The Automobile Trade Directory

BAGS or ROLLS, Tool (Continued)

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Co-Zee—See Omaha Auto. Top Co.
 Dafeoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Utus."
 Deco—See Dafeoe-Eustice Co.
 Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Duk-Bak—See Dafeoe-Eustice Co.
 Economy Stay Co., Jefferson City, Mo.
 Edelstone Fabric Co., Wm. W., 51 Char-don St., Cambridge, Mass., "Wedco." (See page 567.)
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Excelsior Bag & Mfg. Co., Troy, N. Y.
 Feesser Co., Frank E., 1102 Prospect St., Indianapolis, Ind. "Superior."
 Fitzwell—See Niagara Fabric Mfg. Co.
 Goss Co., J. C., 36 Woodbridge St., E. Detroit, Mich.
 Landers Bros. Co., Dept. A2, Toledo, O. (See page 1049.)
 Moisson Mfg. Co., Charleston, S. C.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Omaha Auto Top Co., 709-11 E. 15th St., Omaha, Neb. "Co-Zee."
 Perkins—Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
 Planet Co., 180 N. Elm St., Westfield, Mass.
 Powers Mfg. Co., Waterloo, Ia. (See page 581.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-83 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Superior—See Feesser Co.
 Utus—See Dafeoe-Eustice Co.
 Wedco—See Edelstone Fabric Co.

BAGS, Water Carrying

(For carrying a supply of water on long trips; for Buckets or Pails for filling Radiators—See Buckets, Collapsible)

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.
 Egyptian—See Whitaker Mfg. Co.
 Red Seal—See Schaefer Tent & Awning Co.
 Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 119.)
 Whitaker Mfg. Co., Chicago, Ill. "Egyptian." (See page 1075.)

BAILERS, Motor Boat Automatic Bilge

(See also Pumps, Engine Driven Bilge)

Automatic Bilge Bailer Co., 999 Beacon St., Brookline, Mass. "Hitchcocks."
 Hitchcocks—See Automatic Bilge Bailer Co.

BALANCING MACHINES—See Machines, Balancing**BALANCING WAYS—See Ways, Balancing****BALL BEARINGS—See Bearings, Ball****BALL BEARINGS, REGROUND—See Bearings, Reground Ball****BALL CHECK VALVES—See Valves, Ball Check****BALL CONES—See Cups, Ball****BALL CUPS—See Cups, Ball****BALL JOINTS—See Joints, Ball****BALL RACES—See Cups, Ball****BALL RETAINERS—See Retainers, Ball****BALL SOCKETS FOR FORDS—See Anti-Rattlers****BALL THRUST BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller****BALLOONS, DIRIGIBLE—See Section I****BALLOONS, Spherical**

American Dirigible Balloon Syndicate, 25 W. 43d St., New York, N. Y.
 Coquot—See Connecticut Aircraft Co.
 Connecticut Aircraft Co., 117 Court St., New Haven, Conn. "Coquot."
 Knabenshue Aircraft Corp., 140 W. 43d St., New York, N. Y.

BALLS, Composition Control Lever

(Moulded Composition Balls or Knobs for Gear Shift Levers)

Alco—See American Insulator Co.
 American Insulator Corp., New Freedom, Pa. "Alco." (See page 267.)
 Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 295.)
 Garfield Mfg. Co., Garfield, N. J.
 International Insulating Corp., ft. Mechanic St., Springfield, Mass.
 Pouvalsmith Corp., Smith St., Poughkeepsie, N. Y.

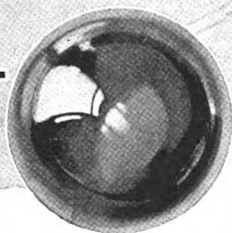
BALLS, Steel

(For use in Ball Bearings; for complete Bearings—See Bearings, Ball)

Abbott Ball Co. (Elmwood), Hartford, Conn.
 Atlas—See SKF Industries, Inc.
 Auburn Ball Bearing Co., 27 Elizabeth St., Rochester, N. Y.
 Bemco Mfg. Co., 350 W. 50th St., New York, N. Y. (See page 97.)
 Bryce Mfg. Co., Academy St., Forestville, Conn.
 C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Importers.) (See page 97.)
 Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 175.)
 Hoover Steel Ball Co., Ann Arbor, Mich. (See page 95.)
 McIntyre Machine Works, 78 Grove St., Hartford, Conn.

Everything is listed under the NOUN or principal word

HOOVER STEEL BALLS



ALMOST invisible — but never forgotten — in the spectacular sweep of industry, Hoover balls insure the free and unimpeded revolution of important mechanisms.

By virtue of their velvet-smooth unblemished surface and their absolute sphericity, they provide lively nimbleness wherever friction must be overcome. Capable of supporting mighty loads and meeting sudden strains and shocks with easy resiliency, they are the creators of bearing satisfaction wherever they are used.

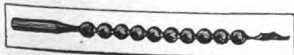
HOOVER STEEL BALL CO.
ANN ARBOR, MICH.

Branch Offices:

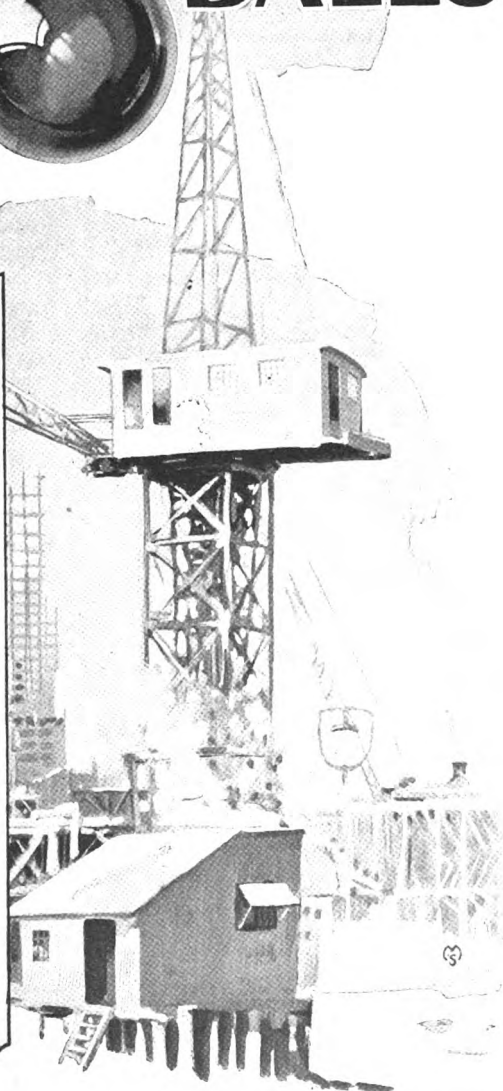
Chicago Cleveland
San Francisco

Southern Representatives:

Sanford Brothers, Chattanooga, Tenn.



Balls greater than $\frac{5}{16}$ -inch in diameter are hot forged from straight bars of steel. Multiple dies are employed to produce strings containing as many as ten balls, the number varying according to the size of the balls. (6)



Please mention The Automobile Trade Directory

BALLS, Steel (Continued)

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Metal Specialty Mfg. Co., E. Aurora St., Waterbury, Conn. "Wamsco."

Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 157.)

SKF Industries, Inc., 165 Broadway, New York, N. Y. "Atlas." (See page 131.)

Wamsco—See Metal Specialty Mfg. Co.

BAND ASSEMBLING CLAMPS FOR FORDS

—See Clamps, Transmission Band Assembling

BAND BRAKES—See Brakes, Expanding and Contracting

BAND SAWS—See Saws, Band

BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

BANDING, BRAKE—See Lining, Brake

BANDING CUTTERS—See Cutters, Brake Lining

BANDING TRANSMISSION FOR FORDS—See Lining, Brake

BANDS, Non-Skid Truck

(Detachable Metal Bands or Rims with Lugs to apply to Truck Wheels to prevent skidding and to give traction; for other Anti-Skid Devices—See Chains, Tire; Boxes, Band; also Treads, Detachable)

Foley Traction Rim Co., 327 Hennepin Ave., Minneapolis, Minn.

BANDS, TIRE REPAIR—See Sleeves, Tire Repair

BANDS, Transmission, for Fords

(Steel band with lugs attached for low speed and reverse gears and for transmission brake)

Demountable Non-Chatter Band Co.—See Russell Mfg. Co.

Denonco—See Russell Mfg. Co.

Duplex Transmission Co., 3159 Army St., San Francisco, Cal.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. (Sole Distributors for Demountable Non-Chatter Band Co., New York, N. Y. "Denonco.") (See page 121.)

BANKERS—See Brokers and Bankers

BANKING INDICATORS, AEROPLANE—See Indicators, Banking

BAR CUTTERS—See Cutters, Rod and Bar

BAR SOLDER—See Solder, Bar and Wire

BAR STEEL—See Steel

BAROGRAPHS, Aircraft Recording

(See also Altimeters; also Barometers)

Green, Henry J., 1191 Bedford Ave., Brooklyn, N. Y.

BAROMETERS, Aircraft

(See also Altimeters; also Barographs)

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

BAROMETERS, Altitude Indicating

(For Dash Attachment)

Bernard, F. J., 64 Murray St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Tycos."

Tycos—See Taylor Instrument Companies.

BARREL EMPTYING PUMPS—See Pumps, Barrel Emptying

BARREL HOLDERS—See Holders or Tippers, Oil Can and Barrel

BARRELS, SHOP—See Boxes, Sheet Metal Tote

BARS, ARCH—See Supports, Hood

BARS, Axle Straightening

Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill.) (See pages 619 to 622.)

Railway Specialty Co., Atchison, Kans.

Service Station Equipment Co.—See Fairbanks Co.

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

BARS, Boring

(See also Tools, Portable Cylindrical Boring)

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa. (See page 635.)

Carr—See Thompson & Son Co.

Clough, R. M., Tolland, Conn.

Davis Boring Tool & Mfg. Co., 3700 Forest Park Blvd., St. Louis, Mo.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Expansion Boring Tool Co., 1444 Rivard St., Detroit, Mich.

Gatchell—See Mill City Co.

Gisholt Machine Co., 1315 E. Washington St., Madison, Wis.

Kelly Reamer Co., 3705 W. 73d St., Cleveland, O.

Krieger Tool & Mfg. Co., Seventh Ave., S., Grand Rapids, Wis.

Madison Mfg. Co., Spring & Elton Sts., Muskegon, Mich. (See page 123.)

Everything is listed under the NOUN or principal word

Where the highest degree of accuracy, uniformity, and finish is desired, "BEMCO" Steel Balls should be used.



We make all sizes and are always prepared to make prompt deliveries to manufacturers and jobbers.

Bemco Manufacturing Co.

(Makers of Steel Balls)
Sales Department, 356 W. 50th Street,
New York City



Most Satisfactory Batteries

Universal Starting and Lighting Batteries are, and have been for years, the most satisfactory batteries under every condition.

There is a Universal Battery for every car and a repair part for any make or size battery. This fact gives the Universal Dealer the cream of the trade.

Dealers should write at once for territory and sales proposition. Also for our new catalogs and reference book pertaining to batteries for all cars and parts for all batteries.

Universal Battery Company
3404 S. La Salle St. - CHICAGO, ILL.

UNIVERSAL
Batteries

MANUFACTURERS - DEALERS AND DISTRIBUTORS IN THE AUTOMOTIVE GROUP BUY

BUCKRAM
BURLAP
MAILING BAGS
COVERS (Cotton, Canvas
and Tarpaulins for Autos,
Tractors, Trucks)
SPRING SEAT PADS
COTTON DUCK
SHEETINGS (Sized-Cotton
and Factory)
SATURATED FELT
SHIPPING STRAPS
GUM TAPE
WATER-PROOF MATERIALS

FROM

The CLEVELAND AKRON BAG CO.
PAPER-COTTON AND JUTE
BAGS OF ALL KINDS
BURLAP IMPORTERS PAPER MAKERS
CLEVELAND



CASTINGS BRONZE AND ALUMINUM

Selling Agents for
FISCHER - SWEENEY
Bronze Co.

BALL BEARINGS
STEEL BALLS
ROLLER BEARINGS

C & C Sales Corporation

1755 Broadway
NEW YORK CITY

Please mention The Automobile Trade Directory

BARS, Boring (Continued)

Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.
 Mill City Co., Minneapolis, Minn. "Gatchell."
 O. K. Tool Holder Co., Shelton, Conn.
 Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."
 Red-E—See Ready Tool Co.
 Rigid Tool Holder Co., 3223 Volta Pl., Washington, D. C.
 Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
 Woods Engineering Co., 108 E. Patterson St., Alliance, O.

BARS, CORED—See Metals, Bearing

BARS, HANDLE—See Bars, Motorcycle Handle

BARS, Motorcycle Handle

Standard Parts Co., Cleveland, O.
 (See page 283.)

BASKETS, TOURING—See Hampers, Touring

BATTERIES, Dry

American Carbon & Battery Co., East St. Louis, Ill.
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
 Big Bear—See Western Dry Battery Co.
 Blue Seal—See Manhattan Electrical Supply Co.
 Bright Star Battery Co., 310 Hudson St., New York, N. Y.
 Bull Dog—See Western Dry Battery Co.
 Burgess Battery Co., Harris Trust Bldg., Chicago, Ill.
 Burn-Boston Battery & Mfg. Works, Little Bldg., Boston, Mass.
 Columbia—See National Carbon Co.
 Eveready—See American Ever Ready Works.
 Hi-Po Waterproof Battery Corp., South Norwalk, Conn.
 Hi-Up—See Manhattan Electrical Supply Co.
 Hipwell Mfg. Co., 325-35 North Ave., Pittsburgh, Pa.
 Hot Shot—See National Carbon Co.
 Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y. "Mesco," "Blue Seal," "Red Seal," "Hi-Up."
 Maxlife—See Stolp Co.
 Mesco—See Manhattan Electrical Supply Co.
 National Carbon Co., Cleveland, O. "Columbia," "Hot Shot." (See page 167.)
 Nue—See Union Battery Co.
 Power—See Union Battery Co.
 Red Seal—See Manhattan Electrical Supply Co.
 Red Shield—See Wesco Supply Co.
 Sparko—See Andrae & Sons Co.
 Stolp Co., 2210 S. Park Ave., Chicago, Ill. "Maxlife."
 Union Battery Co., Belleville, N. J. "Nue," "Power."
 Washington Automobile Supply Co., Washington, Ill.
 Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. "Red Shield."
 Western Dry Battery Co., 2501 15th Ave., W., Seattle, Wash. "Bull Dog," "Big Bear."

Acme Storage Battery Corp., Poughkeepsie, N. Y. (See page 101.)
 Ajax—See United States Battery Co.
 Ajax-Accumulator Co., 414 Rush St., Chicago, Ill.
 Am-Plus Storage Battery Co., 741-45 W. Van Buren St., Chicago, Ill.
 American Battery Co., 2000 McGee St., Kansas City, Mo. "Strongheart."
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
 American Storage Battery Co., Cambridge, Mass. "Harvard."
 Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 101.)
 Asco—See Accessory Supply Co.
 Ashbrook Electric Co., 4111 Ravenswood Ave., Chicago, Ill.
 Atlas Electric Storage Battery Co., Grove St., Greenville, Mich.
 Aurora—See Marvin Battery & Engineering Corp.
 Barco Battery Co., 641 Monroe St., Detroit, Mich. "Bear Cat," "Biltwell."
 Battery Service Corp., Philadelphia, Pa. "Kelco."
 Bear Cat—See Barco Battery Co.
 Big Four Battery Co., Calumet & Gostlin Sts., Hammond, Ind. (See page 915.)
 Biltwell—See Barco Battery Co.
 Blue Seal—See Manhattan Electrical Supply Co.
 Buffalo Battery Co., 6-10 Northampton St., Buffalo, N. Y.
 C. I. S. C. O.—See Chicago Ignition Supply Co.
 C & D—See Carlile & Doughty.
 Calumet Storage Battery Co., 10113 Indianapolis Ave., Chicago, Ill.
 Campbell Electric Co., 1539 Wyandotte St., Kansas City, Mo.
 Carlile & Doughty, 2534 N. Broad St., Philadelphia, Pa. "C & D."
 Chain Battery System, 2322 S. Michigan Ave., Chicago, Ill.
 Chicago Ignition Supply Co., 308 N. Michigan Ave., Chicago, Ill. "C. I. S. C. O."
 Cincinnati Storage Battery Co., Moorma Ave., Cincinnati, O.
 Cole Storage Battery Co., 2432-39 Indiana Ave., Chicago, Ill. (See page 101.)
 Columbia—See National Carbon Co.
 Columbia Storage Battery Co., 313 Ohio St., Terre Haute, Ind.
 Combat—See Commercial Battery Co.
 Commercial Battery Co., 759-61 Boston Ave., Chicago, Ill. "Combat."
 Cook Railway Signal Co., 1793 S. Broadway, Denver, Colo. "Re Vivo."
 Cooper Storage Battery Mfg. Co., Eighth & Union Sts., Cincinnati, O.
 Cowie Electric Co., E. S., 1816 McGee St., Kansas City, Mo.
 Crown Battery Co., 53 Montcalm St., W., Detroit, Mich.
 D-G Storage Battery Co., 2029-37 Indiana Ave., Chicago, Ill. (See page 979.)
 Davis-Lynn Storage Battery Mfg. Co., 486 Chestnut St., Lynn, Mass.
 Detroit—See Disco Electric Mfg. Co.
 Disco Electric Mfg. Co., 2100 Howard St., Detroit, Mich. "Detroit."
 Dixie Storage Battery Co., 1412-18 W. Lafayette Ave., Baltimore, Md.
 Dragon—See Englert Mfg. Co.
 Dreadnaught—See Gould Storage Battery Co.
 Duplex Storage Battery Co., Beaver Dam, Wis. (See page 125.)

BATTERIES, Storage

Accessory Supply Co., 1218-20 E. 12th St., Kansas City, Mo. "Asco."

Everything is listed under the NOUN or principal word

RAY

Your Opportunities in the 1921 Battery Business

1921 is going to be the greatest replacement and repair year in the history of the automobile business. Thousands of car owners who, in different times, would have traded in their old cars for new, are going to have the old car refitted and overhauled for another season's use.

This condition will create a huge battery replacement market. A major portion of these cars will have to be refitted with new batteries. But the 1921 buyers will be shoppers. They will insist upon dollar value in the purchase of a new battery exactly as they are in the purchase of clothes, foodstuffs and other necessities.

For that reason RAY distributors and service stations are going to have a banner year. The public recognizes in the RAY a battery which sells at a fair initial price, yet guaranteed so broadly that no other battery maker can even offer value competition.

The RAY is guaranteed unconditionally for two years. This means you can tell a prospect that he will never have any guesswork as to the cost of his battery service, because he will be given a new battery if his RAY fails to function properly at any time within two years after he buys it from you.

The RAY guarantee gives you a sales argument that your competitors cannot undermine.

The reason for the guarantee is a better battery—RAY has proved in actual tests to be so superior to ordinary makes that there is really no just comparison.

There is valuable territory still available.

RAY

Types	Prices
6 Volt—11 Plate	\$29.00
6 Volt—13 Plate	33.00
12 Volt—7 Plate	39.00

F. O. B. Ypsilanti

RAY BATTERY COMPANY

35 North Huron Street

Ypsilanti, Michigan

Roy R. Fisher, President; Thomas Lavier, Vice-President and Chief Engineer

RAY

Please mention The Automobile Trade Directory

BATTERIES, Storage (Continued)

- Edison Storage Battery Co., 121 Lakeside Ave. (W. Orange), Orange, N. J.
 Electric Storage Battery Co., Allegheny Ave. & 19th St., Philadelphia, Pa. "Exide."
 Electrolyte Storage Battery Co., 1309 Race St., Philadelphia, Pa.
 Englert Mfg. Co., Pittsburgh, Pa. "Dragon."
 Eureka Battery Corp., Addison & Herndon Sts., Chicago, Ill.
 Eveready—See American Ever Ready Works.
 Exide—See Electric Storage Battery Co.
 Federal Battery Mfg. Corp., 620-24 F St., N. W., Washington, D. C.
 Fort Wayne Battery Mfg. Co., Fort Wayne, Ind. "Samson."
 Fritchle Electric Co., 1544 Clarkson St., Denver, Colo.
 General Lead Batteries Co., 4 Lister Ave., Newark, N. J. "Titan."
 General Storage Battery Co., 2005 Locust St., St. Louis, Mo.
 Gillette Storage Battery Co., 2115-19 Wabash Ave., Chicago, Ill.
 Globe Electric Co., 14-23 Keefe Ave., Milwaukee, Wis.
 Gold Seal Storage Battery Co., James & McDonald Sts., Green Bay, Wis.
 Gould Storage Battery Co., 30 E. 42d St., New York, N. Y. "Dreadnaught."
 Grant Storage Battery Co., 104 N. Second St., Minneapolis, Minn.
 Grosche, F. W., 219 W. Mulberry St., Baltimore, Md. "Patapasco."
 Guaranteed Battery Co., 2017-25 Lucas Ave., St. Louis, Mo. "Lion." (See page 123.)
 Hartford Battery Mfg. Co., Milldale, Conn.
 Harvard—See American Storage Battery Co.
 Heissler Storage Battery Co., 2506-10 Cottage Grove Ave., Chicago, Ill.
 Hi-Up—See Manhattan Electrical Supply Co.
 Hinz Storage Battery Co., 1212-14 Third Ave. S., Minneapolis, Minn.
 Hobbs Storage Battery Co., 1231-35 S. Olive St., Los Angeles, Cal.
 Hudson-Fulton—See Storage Battery Supply Co.
 Ionite Storage Battery Co., 456 Park Ave., Worcester, Mass.
 J-E Battery Co., 1113 S. Broad St., Philadelphia, Pa.
 Jupiter—See Perfection Storage Battery Co.
 Keeler Battery Co., 124 Ontario St., Toledo, O.
 Kelco—See Battery Service Corp.
 Keystone Storage Battery Co., 2036 Sansom St., Philadelphia, Pa.
 Larimore & Sinclair, 211 Guilford Ave., Baltimore, Md.
 LBA—See Willard Storage Battery Co.
 Lion—See Guaranteed Battery Co.
 Luthy Storage Battery Co., 1170 Broadway, New York, N. Y.
 Lyons & Co., A. H., Stephen Girard Bldg., Philadelphia, Pa. (See page 115.)
 M. & M.—See Molter Service Co.
 McCauley Storage Battery Co., 1060 St. Clair Ave., E., Cleveland, O.
 McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
 Mac-Lar Battery Co., 1050 Third St., Detroit, Mich.
 Mack Storage Battery Co., 419 E. Jefferson Ave., Detroit, Mich.
 Manhattan Electrical Supply Co., 17 Park Place, New York, N. Y. "Mesco." "Blue Seal." "Red Seal." "Hi-Up."
 Marko & Co., Paul M., 1402-12 Atlantic Ave., Brooklyn, N. Y.
 Marvin Battery & Engineering Corp., 67 S. La Salle St., Aurora, Ill. "Aurora."
 Masco—See Milwaukee Auto Specialty Co.
 Master—See Standard Storage Battery Co.
 Mesco—See Manhattan Electrical Supply Co.
 Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium." "Masco."
 Minnesota Storage Battery Co., 208-10 Fourth St. N., Minneapolis, Minn.
 Molter Service Co., 306 S. Wabash Ave., Chicago, Ill. "M. & M."
 Muller, Albert, Hoffman Bldg. & Hillside Ave., Jamaica, N. Y. "Porox."
 Multiple Storage Battery Co., Van Wyck Ave. & L. I. R. R., Jamaica, N. Y.
 National Carbon Co., Cleveland, O. "Columbia." (See page 167.)
 National Lead Battery Co., 1704 Roblyn Ave., St. Paul, Minn.
 O. K. Giant Battery Corp., Gary, Ind. (See page 239.)
 Paragon Battery Service Co., 64-66 W. High St., Detroit, Mich.
 Patapasco—See Grosche, F. W.
 Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
 Permalife Storage Battery Co., Merchants Bank Bldg., Indianapolis, Ind.
 Philadelphia Storage Battery Co., Ontario & C Sts., Philadelphia, Pa. (See page 157.)
 Pioneer Storage Battery Co., 1415 Race St., Philadelphia, Pa.
 Pleis Storage Battery, 1708 Spring Garden St., Philadelphia, Pa.
 Porox—See Muller, Albert.
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill.
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.
 R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.
 Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.
 Radium—See Milwaukee Auto Specialty Co.
 Radium—See Rumsey Electric Co.
 Ray Battery Co., 35 N. Huron St., Ypsilanti, Mich. (See page 99.)
 Red Cap—See Wolke Lead Batteries Co.
 Red Seal—See Manhattan Electrical Supply Co.
 Reliable—See Storage Battery Supply Co.
 Reliance—See Storage Battery Supply Co.
 Rumsey Electric Co., 3033 North Grand Blvd., Detroit, Mich. "Radium."
 S. O. S.—See Victor Storage Battery Co.
 Samson Battery Mfg. Co., Fort Wayne, Ind.
 Schug Electric Mfg. Co., 959 E. Jefferson Ave., Detroit, Mich.
 Silvey Electric Co., 10-16 S. Canal St., Dayton, O.
 Standard Storage Battery Co., 146 Third St., Detroit, Mich. "Master."
 Star Storage Battery Co., 311 N. Jefferson St., Muncie, Ind.
 Stewart Storage Battery Co., 212 E. 21st St., Chicago, Ill.
 Storage Battery Supply Co., 239 E. 27th St., New York, N. Y. "Reliance." "Reliable." "Hudson-Fulton."
 Strongheart—See American Battery Co.
 Superior Storage Battery Co., Kansas City, Mo.
 Titan—See General Lead Batteries Co.
 United Auto Electric Service Co., 197 Amsterdam Ave., New York, N. Y.
 U-S-L—See U S Light & Heat Corp.
 U. S. Light & Heat Corp., Niagara Falls, N. Y. "U-S-L." (See page 279.)
 United States Battery Co., Passaic, N. J. "Ajax." (See page 101.)
 Universal Battery Co., 3404 S. La Salle St., Chicago, Ill. (See page 97.)

Everything is listed under the NOUN or principal word



Manufacturers of Plates for Automobile and Farm Lighting Batteries. Brass and Lead Parts.

Rubber Jars, Covers, Battery Cases, Wood Separators.

We carry a complete stock of Replacement Parts for all types of Batteries.

Jobbers, Distributors and Service Stations, write us for Catalogue and Price List.

Arthur Storage Battery Supply Co.,
2540-42 Cottage Grove Av., Chicago



— for —

Automobile Starting, Lighting and Ignition Service

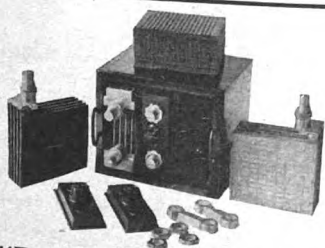
AJAX Batteries are specially constructed to deliver better Automobile Battery Service at reasonable prices.

Long individual experience in all branches of the battery field enables us to produce types that will withstand reasonable abuse with long life and uniformly high capacity.

AJAX Batteries are made for all models of electrically-equipped cars.

Write for our Complete Replacement Book.

United States Battery Company
Passaic New Jersey



"Build Up a Battery Business of Your Own"

We are now supplying many leading jobbers and distributors with our disassembled batteries.

These batteries come to you as shown in the cut so that you can inspect each part before it is sealed, charged and delivered to your trade.

By means of this high-grade battery you can create a business which you will absolutely control.

Write for our proposition and turn into real cash the prestige you have built up among your customers.

ACME STORAGE BATTERY CORP.
Poughkeepsie, N. Y.



THE SUPER BATTERY Starting, Vehicle and Farm Lighting Batteries

Cole Storage Battery Co.
2433-35-37-39 Indiana Ave.
Chicago, Illinois

Southern distributing branch
Cole Storage Battery Co.
414 Locust Street
Evansville, Indiana

BATTERIES, Storage (Continued)

Utility Battery Co., 123 W. Madison St., Chicago, Ill.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor Storage Battery Co., First St. & Fourth Ave., Moline, Ill. "S. O. S."
 Victory Storage Battery Co., 122-24 S. Sixth St., Louisville, Ky.
 Volkcar Storage Battery Co., 2437 Michigan Ave., Chicago, Ill.
 Westinghouse Union Battery Co., Swissvale, Pa.
 Willard Storage Battery Co., Cleveland, O. "Lba." (See page 123.)
 Witherbee Storage Battery Co., 643-45 W. 43rd St., New York, N. Y. (See page 315.)
 Wittmann Co., 205 S. 11th St., Lincoln, Neb.
 Wolke Lead Batteries Co., 918 E. Main St., Louisville, Ky. "Red Cap." (See page 103.)
 Wright Storage Battery Co., 1384 Grand River Ave., Detroit, Mich.
 Zoar Battery Co., Zoar, O.

BATTERY ACID—See Electrolyte, Storage Battery

BATTERY BOOSTERS—See Rectifiers, Alternating Current

BATTERY BOX LOCKS—See Locks, Cabinet and Pad; also Catches and Fasteners, Spring

BATTERY BOXES—See Boxes, Battery

BATTERY CHARGERS—See Magnetos and Dynamos; also Dynamos, Battery Charging; also Rectifiers, Alternating Current; also Rheostats, Charging; also Systems, Electric Lighting

BATTERY CHARGING CLIPS—See Clips, Electrical Test; also Connectors, Storage Battery Charging

BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

BATTERY CHARGING PLUGS—See Plugs, Charging

BATTERY CONNECTOR DRILLS—See Drills and Bits, Battery Strap

BATTERY CONNECTORS—See Connectors, Dry Battery; also Connectors, Storage Battery

BATTERY CONTROLLERS—See Controllers, Storage Battery

BATTERY COVERS FOR FORDS—See Covers, Battery

BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

BATTERY FILLERS—See Fillers, Automatic Storage Battery

BATTERY GAGES—See Gages, Battery

BATTERY HANDLES—See Handles, Storage Battery

BATTERY HOLDERS—See Holders, Battery; also Boxes, Battery

BATTERY IGNITION SYSTEMS—See Systems, Battery Ignition

BATTERY JARS—See Jars, Battery

BATTERY METERS—See Gages, Battery

BATTERY OPENING GENERATORS—See Steamers, Storage Battery

BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

BATTERY POST CUTTERS—See Tools, Storage Battery Repair

BATTERY REPAIR PARTS—See Parts, Storage Battery Repair

BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

BATTERY SEPARATORS—See Separators, Storage Battery

BATTERY STEAMERS—See Steamers, Storage Battery

BATTERY STRAP BITS—See Drills and Bits, Battery Strap

BATTERY STRAP DRILLS—See Drills and Bits, Battery Strap

BATTERY TESTERS—See Gages, Battery

BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

BATTERY THERMOSTATS—See Thermostats, Storage Battery

BATTERY TONGS—See Tools, Storage Battery Repair

BATTERY TURNABLES—See Turntables, Storage Battery

BATTERY VISES—See Vises, Storage Battery

BEADING MACHINES—See Machines, Crimping and Beading

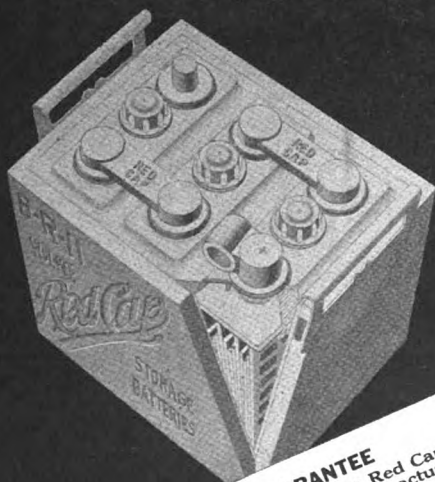
BEAMS, AIRPLANE—See Parts, Wood

BEARING BRONZE—See Metals, Bearing

BEARING GRINDING COMPOUNDS—See Compounds, Bearing Grinding

BEARING JIGS—See Jigs, Main Bearing

Everything is listed under the NOUN or principal word



WOLKE
Red Cap
STORAGE
BATTERIES

We Guarantee It For Two Years

RED CAP DEALERS know that we know the trustworthiness of every Red Cap Battery before we attach this guarantee. It protects both yourself and your customer.

You can make money with the Red Cap Battery. Write us about it today. If your territory is open we can start you in a profitable business.

TWO-YEAR GUARANTEE

We hereby guarantee Wolke Red Cap Battery No. _____ to have an actual ampere hour capacity when delivered, equal to or greater than indicated on the name plate.

It is further guaranteed to develop proper service for a period of two years from date of sale.

SPECIAL WARRANTY

The Wolke Lead Batteries Co. will replace, without charge, any Red Cap Battery that proves defective inside of three months from date of original purchase.

THE WOLKE LEAD BATTERIES CO.
INCORPORATED
LOUISVILLE · MANUFACTURERS · KENTUCKY

Red Cap
TRADE MARK
STORAGE BATTERIES

Please mention The Automobile Trade Directory

BEARING METALS—See Metals, Bearing

BEARING PARTING TOOLS, CAM-SHAFT FOR FORDS—See Tools, Cam-Shaft Bearing Parting

BEARING PULLERS—See Pullers, Bearing

BEARING PULLING TOOLS—See Pullers, Bearing

BEARING REAMERS FOR FORDS—See Reamers, Main Bearing

BEARING SCRAPERS—See Scrapers, Bearing

BEARING SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

BEARINGS, BABBITT—See Metals, Bearing

BEARINGS and BUSHINGS, Babbitt-lined, Bronze-backed

(For Die Cast Bearings—See Bearings, Die Cast; For Bearings, Plain Bronze—See Bushings, Bronze; For Bearing Metal—See Metals, Bearing)

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."

American Bearing & Die Casting Corp., Indianapolis, Ind. (See page 267.)

Doehler Die-Casting Co., Brooklyn, N. Y. (See page 213.)

Federal Bearing & Bushing Corp., Detroit, Mich. (See page 361.)

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)

Gilbert & Sons Brass Foundry Co., A., St. Louis, Mo. (See page 197.)

Hoyt Metal Co., St. Louis, Mo. (See page 201.)

Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.

Lynux—See Aluminum Manufacturers, Inc.

Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 211.)

Modern Die & Tool Co., Indianapolis, Ind. "Victor." (See page 109.)

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Musny-Lyon Co., Detroit, Mich. (See page 109.)

National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.

Parker White Metal & Machine Co., 23d St. and McKinley Ave., Erie, Pa.

R. & V. Motor Co., East Moline, Ill.

Ring True—See General Aluminum & Brass Mfg. Co.

Ryerson & Son, Joseph T., Chicago, Ill.

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill. (See page 297.)

Victor—See Modern Die & Tool Co.

BEARINGS, Ball

(For Bearing Parts—See Balls, Steel; also Cups, Ball; also Retainers, Ball)

Acorn Bearing Co., 26 Brook St., New Britain, Conn. (See page 125.)

Aetna Ball Bearing Mfg. Co., 213-31 Institute Pl., Chicago, Ill. (See page 147.)

Allopar—See Alloy Parts Mfg. Co.

Alloy Parts Mfg. Co., Canton, O. "Allopar."

American Ball Co., 115 Clifford St., Providence, R. I.

Auburn Ball Bearing Co., 27 Elizabeth St., Rochester, N. Y.

B-N—See Burgess-Norton Mfg. Co.

Ball & Roller Bearing Co., 22 Maple Ave., Danbury, Conn. "Barbco."

Bantam Ball Bearing Co., Bantam, Conn.

Barbco—See Ball & Roller Bearing Co.

Bearings Co. of America, Lancaster, Pa. (See page 133.)

Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa. (Distributors.) (See page 407.)

Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)

C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Importers.) (See page 97.)

Fafnir Bearing Co., New Britain, Conn.

Federal Bearings Co., 26 William St., Poughkeepsie, N. Y. "Schatz."

G-A Ball Bearing Co., 123 N. Albany Ave., Chicago, Ill.

Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)

Gurney Ball Bearing Co., Jamestown, N. Y. (See page 161.)

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 175.)

Hess-Bright—See SKF Industries, Inc.

Imperial Bearing Co., Detroit, Mich. (See page 220.)

Joy Ball Bearing Co., 407 S. Aberdeen St., Chicago, Ill.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "S. R. B."

Mathews Mfg. Co., H. A., Seymour, Conn.

Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 157.)

New Departure Mfg. Co., Bristol, Conn. (See page 111.)

Nice Ball Bearing Co., 30th St. & Nicetown Lane, Philadelphia, Pa.

Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 74.)

Pruyn Co., 683 N. Broad St., Philadelphia, Pa. SKF Industries, Inc., 165 Broadway, New York, N. Y. "Hess-Bright." (See page 131.)

S. R. B.—See Marlin-Rockwell Corp.

S R O—See Marburg Bros.

S-W-S Co., Minneapolis, Minn. (See page 457.)

Schatz—See Federal Bearings Co.

Smith Bearings Co., L. C., 2200 Michigan Ave., Chicago, Ill. (Chicago Distributor for Nice, Fafnir and Gurney Bearings.) (See page 109.)

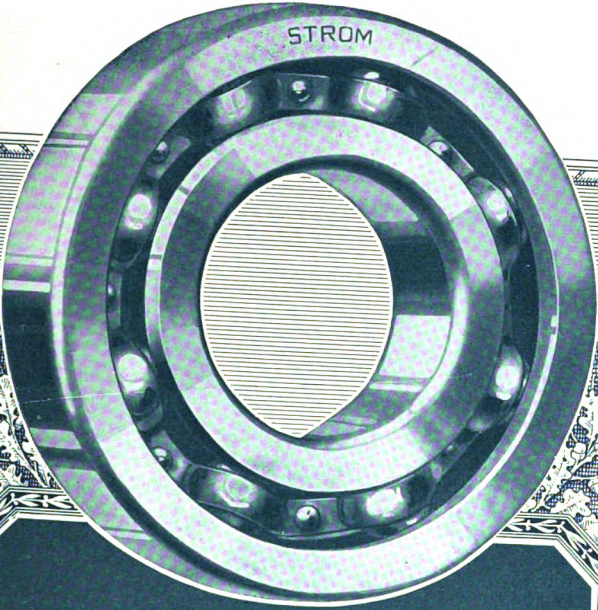
Standard Machinery Co., Auburn, R. I. (See page 135.)

Strom—See U. S. Ball Bearing Mfg. Co.

U. S. Ball Bearing Mfg. Co., Palmer St. & Kolmer Ave., Chicago, Ill. "Strom." (See pages 105 to 108 and front cover.)

BEARINGS, BRONZE—See Metals, Bearing

Everything is listed under the NOUN or principal word



STROM

Strom

BEARINGS

U. S. BALL BEARING
MANUFACTURING CO.
(Conrad Patent License)
Palmer Street and Kolmar Avenue
CHICAGO, ILL. U. S. A.

PARTIAL LIST OF STANDARD ANNULAR BEARINGS **RADIAL BEARINGS—LIGHT 200 SERIES**

No. of Bearing	LIST PRICES	BORE		DIAMETER		WIDTH	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
200	\$4.00	10	0.3937	30	1.1811	9	0.3543
201	4.25	12	0.4724	32	1.2598	10	0.3937
202	4.50	15	0.5906	35	1.3780	11	0.4331
203	5.00	17	0.6693	40	1.5748	12	0.4724
204	5.90	20	0.7874	47	1.8504	14	0.5513
205	7.25	25	0.9843	52	2.0473	15	0.5906
206	9.50	30	1.1811	62	2.4410	16	0.6299
207	11.00	35	1.3780	72	2.8347	17	0.6693
208	13.00	40	1.5748	80	3.1496	18	0.7087
209	14.25	45	1.7717	85	3.3465	19	0.7480
210	15.50	50	1.9685	90	3.5433	20	0.7874
211	17.50	55	2.1654	100	3.9370	21	0.8268
212	21.50	60	2.3622	110	4.3307	22	0.8661
213	27.50	65	2.5591	120	4.7244	23	0.9055
214	30.00	70	2.7559	125	4.9213	24	0.9449
215	33.00	75	2.9528	130	5.1181	25	0.9843
216	37.50	80	3.1496	140	5.5118	26	1.0236
217	43.00	85	3.3465	150	5.9055	28	1.1024
218	52.00	90	3.5433	160	6.2992	30	1.1811
219	60.00	95	3.7402	170	6.6929	31	1.2598
220	78.00	100	3.9370	180	7.0866	34	1.3385
221	90.00	105	4.1339	190	7.4804	36	1.4173
222	100.00	110	4.3307	200	7.8741	38	1.4961

RADIAL BEARINGS—MEDIUM 300 SERIES

No. of Bearing	LIST PRICES	BORE		DIAMETER		WIDTH	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
300	\$5.00	10	0.3937	35	1.3780	11	0.4331
301	5.25	12	0.4724	37	1.4567	12	0.4724
302	5.75	15	0.5906	42	1.6536	13	0.5118
303	6.75	17	0.6693	47	1.8504	14	0.5513
304	8.50	20	0.7874	52	2.0473	15	0.5906
305	10.00	25	0.9843	62	2.4410	17	0.6693
306	12.50	30	1.1811	72	2.8347	19	0.7480
307	14.50	35	1.3780	80	3.1496	21	0.8268
308	16.50	40	1.5748	90	3.5433	23	0.9055
309	20.00	45	1.7717	100	3.9370	25	0.9843
310	23.50	50	1.9685	110	4.3307	27	1.0630
311	28.50	55	2.1654	120	4.7244	29	1.1417
312	35.00	60	2.3622	130	5.1181	31	1.2205
313	42.50	65	2.5591	140	5.5118	33	1.2993
314	50.00	70	2.7559	150	5.9055	35	1.3780
315	62.50	75	2.9528	160	6.2992	37	1.4567
316	72.00	80	3.1496	170	6.6929	39	1.5354
317	85.50	85	3.3465	180	7.0866	41	1.6142
318	105.00	90	3.5433	190	7.4804	43	1.6929
319	120.00	95	3.7402	200	7.8741	45	1.7717
320	135.00	100	3.9370	215	8.4646	47	1.8504
321	150.00	105	4.1339	225	8.8583	49	1.9291
322	180.00	110	4.3307	240	9.4489	50	1.9685

RADIAL BEARINGS—HEAVY 400 SERIES

No. of Bearing	LIST PRICES	BORE		DIAMETER		WIDTH	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
403	\$11.00	17	0.6693	62	2.4410	17	0.6693
404	12.50	20	0.7874	72	2.8347	17	0.7480
405	14.50	25	0.9843	80	3.1496	21	0.8268
406	17.50	30	1.1811	90	3.5433	23	0.9055
407	21.00	35	1.3780	100	3.9370	25	0.9843
408	24.00	40	1.5748	110	4.3307	27	1.0630
409	29.50	45	1.7717	120	4.7244	29	1.1417
410	36.00	50	1.9685	130	5.1181	31	1.2205
411	43.00	55	2.1654	140	5.5118	33	1.2993
412	51.00	60	2.3622	150	5.9055	35	1.3780
413	66.00	65	2.5591	160	6.2992	37	1.4567
414	88.00	70	2.7559	170	6.6929	39	1.5354
415	105.00	75	2.9528	180	7.0866	41	1.6142
416	120.00	80	3.1496	190	7.4804	43	1.6929
417	140.00	85	3.3465	200	7.8741	45	1.7717
418	165.00	90	3.5433	210	8.2678	47	1.8504
419	215.00	95	3.7402	225	8.8583	49	1.9291
420	275.00	100	3.9370	240	9.4489	50	1.9685
421	.....	105	4.1339	255	10.4331	55	2.1654
422	.....	110	4.3307	270	11.4174	60	2.3622
				320	12.5985	70	2.7559

Discounts quoted upon application

PARTIAL LIST OF STANDARD THRUST BEARINGS THRUST BEARINGS—B SERIES

Number of Bearing	List Price	Bore, Inches	Diameter, Inches	Thickness, Inches
1-B	\$4.25	$\frac{1}{4}$	1 $\frac{1}{4}$	$\frac{1}{4}$
2-B	4.60	$\frac{1}{2}$	1 $\frac{1}{2}$	$\frac{1}{2}$
3-B	5.00	$\frac{3}{4}$	1 $\frac{3}{4}$	$\frac{3}{4}$
4-B	5.40	1	2	1
5-B	5.85	1 $\frac{1}{4}$	2 $\frac{1}{4}$	1 $\frac{1}{4}$
6-B	6.25	1 $\frac{1}{2}$	2 $\frac{1}{2}$	1 $\frac{1}{2}$
7-B	6.60	1 $\frac{3}{4}$	2 $\frac{3}{4}$	1 $\frac{3}{4}$
8-B	7.00	2	3	2
9-B	7.50	2 $\frac{1}{4}$	3 $\frac{1}{4}$	2 $\frac{1}{4}$
10-B	8.25	2 $\frac{1}{2}$	3 $\frac{1}{2}$	2 $\frac{1}{2}$
11-B	9.20	2 $\frac{3}{4}$	3 $\frac{3}{4}$	2 $\frac{3}{4}$
12-B	10.00	3	4	3
13-B	10.85	3 $\frac{1}{4}$	4 $\frac{1}{4}$	3 $\frac{1}{4}$
14-B	12.25	3 $\frac{1}{2}$	4 $\frac{1}{2}$	3 $\frac{1}{2}$
15-B	14.40	4	5	4
16-B	16.80	4 $\frac{1}{4}$	5 $\frac{1}{4}$	4 $\frac{1}{4}$
17-B	18.60	4 $\frac{1}{2}$	5 $\frac{1}{2}$	4 $\frac{1}{2}$
18-B	27.75	5	6	5
19-B	35.00	5 $\frac{1}{4}$	6 $\frac{1}{4}$	5 $\frac{1}{4}$

THRUST BEARINGS—1100 F SERIES

Number of Bearing	List Price	BORE		DIAMETER		THICKNESS	
		Mm.	Inches	Mm.	Inches	Mm.	Inches
1102-F	\$3.30	10	.3937	30	1.18	12	.47
1103-F	3.65	15	.5906	35	1.38	14	.55
1104-F	4.25	20	.7874	40	1.57	14	.55
1105-F	4.75	25	.9843	48	1.89	15	.59
1106-F	5.25	30	1.1811	53	2.09	15	.59
1107-F	6.25	35	1.3780	62	2.44	18	.71
1108-F	7.25	40	1.5748	64	2.52	18	.71
1109-F	8.50	45	1.7717	73	2.87	20	.79
1110-F	9.50	50	1.9685	78	3.07	20	.79
1111-F	11.00	55	2.1654	88	3.46	24	.94
1112-F	12.00	60	2.3622	90	3.54	24	.94
1113-F	13.00	65	2.5591	100	3.94	27	1.06
1114-F	14.50	70	2.7559	103	4.06	27	1.06
1115-F	16.00	75	2.9528	110	4.33	27	1.06
1116-F	17.50	80	3.1496	115	4.53	31	1.23
1117-F	23.00	85	3.3465	125	4.92	34	1.34
1118-F	25.50	90	3.5433	135	5.31	38	1.43
1119-F	28.00	95	3.7402	140	5.51	38	1.50
1120-F	30.25	100	3.9370	150	5.91	38	1.50
1121-F	32.50	105	4.1339	155	6.10	40	1.57
1122-F	37.00	115	4.5276	165	6.50	43	1.69
1123-F	41.00	125	4.9213	180	7.09	46.5	1.83
1123-F	49.00	140	5.5118	200	7.87	52	2.05

SELF-ALIGNING THRUST BEARINGS—1100 AND 1100 U SERIES

Number of Bearing	List Price		BORE		DIAMETER		THICKNESS	
	Without Washer	With Washer	Mm.	Inches	Mm.	Inches	Mm.	Inches
1102	\$4.00	\$5.45	10	0.3937	30	1.18	14	0.55
1103	4.50	5.95	15	0.5906	35	1.38	15	0.59
1104	5.35	6.95	20	0.7874	40	1.57	16	0.63
1105	5.90	7.50	25	0.9843	48	1.89	16.5	0.65
1106	6.40	8.25	30	1.1811	53	2.09	18	0.71
1107	7.50	9.45	35	1.3780	62	2.44	21	0.83
1108	8.60	10.85	40	1.5748	64	2.52	21	0.83
1109	9.90	12.50	45	1.7717	73	2.87	25	0.98
1110	11.25	13.90	50	1.9685	78	3.07	25	0.98
1111	12.85	15.90	55	2.1654	88	3.46	28	1.10
1112	13.90	17.10	60	2.3622	90	3.54	28	1.10
1113	15.50	19.00	65	2.5591	100	3.94	32	1.26
1114	17.50	21.90	70	2.7559	103	4.06	32	1.26
1115	20.35	23.55	75	2.9528	110	4.33	32	1.26
1116	20.35	25.15	80	3.1496	115	4.53	33	1.29
1117	26.75	31.80	85	3.3465	125	4.92	38	1.50
1118	30.00	35.80	90	3.5433	135	5.31	38	1.50
1119	33.15	39.60	95	3.7402	140	5.51	41	1.61
1120	35.50	43.30	100	3.9370	150	5.91	41	1.61
1121	38.00	46.80	105	4.1339	155	6.10	46	1.81
1122	42.50	51.35	115	4.5276	165	6.50	49	1.93
1123	49.25	59.35	125	4.9213	180	7.09	53	2.09
1123	58.00	71.70	140	5.5118	200	7.87	60	2.36

Discounts quoted upon application

The information and bearing sizes given herewith, obviously, are extremely limited. We have endeavored only to show the principal dimensions covering those radial and thrust bearings most frequently used in the automobile industry.

The following is a list of the different types of Strom Bearings manufactured:

Radial

Made in any size for light, medium, or heavy duty; with deep groove ball races accurately formed, in which large sized balls, separated by a light and sturdy retainer, roll true with the least friction. They are especially adapted above all others to sustain large radial loads under severe operating conditions. They are capable of resisting end thrust loads equal to 25% of their available radial capacity.

Angular Contact

Made in the same sizes and interchangeable with the radial bearings. They are of similar construction to the radial bearings, being especially designed to support combinations of radial and heavy end thrust loads acting in one direction. They have an end thrust capacity equal to 150% of their available radial capacity.

Thrust

Made in all types and sizes with flat and grooved races to meet all conditions of speed and thrust loads acting in one or two directions, and compensating for misalignment. They are of the same typical sturdy construction for which STROM bearings are noted, and are especially adapted to sustain exceptionally large thrust loads.

Write for complete catalog, engineering literature, and prices. We maintain a large staff of designing engineers that are at your disposal for the solution of any ball bearing problem.

U. S. BALL BEARING MFG. CO.

(Conrad Patent Licensees)

CHICAGO

ILL., U. S. A.

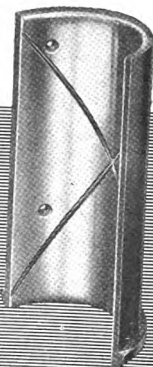


Look For That Mogul Trade Mark

In a motor bearing the Mogul trade-mark guarantees "insurance" from motor trouble through use of virgin metals, correct formulas and expert manufacturing processes. The stamping of the Mogul trade-mark is the last operation—after final inspection. It is our guarantee of Mogul perfection—the sign that tells you it can be placed in your car and forgotten.

Send for booklet—"Better Motor Bearings."

MUZZY-LYON COMPANY, DETROIT, MICHIGAN



Mogul

Bearing Alloys and Finished Bearings

VICTOR BEARINGS

Bronze Back and Die Cast

Are regular equipment on all leading trucks—tractors—pleasure cars.

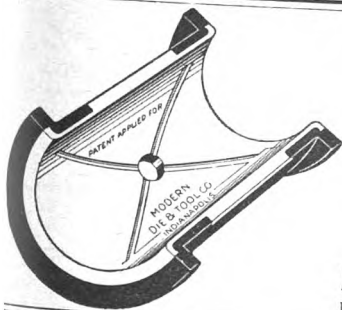
They stand for the best in bearing construction. They mean that you are getting value received—a bearing that is in absolute accordance with your blueprints and specifications.

Send us your Blueprints for an Estimate

MODERN DIE AND TOOL CO., Indianapolis, Ind.

Established 1905

W. L. SANDAGE, Proprietor



"Service That Is Service"

Ball and Roller Bearings

ALL MAKES AND SIZES
IN ANY QUANTITY

Write for our monthly bargain list
Wholesale only

L. C. Smith Bearings Co.
2202 S. Michigan Ave. Chicago, Ill.



Please mention The Automobile Trade Directory

BEARINGS, DIE CAST—See Castings, Die

BEARINGS, DIE CAST, FOR FORDS—See Bushings, Bronze and Die Cast

BEARINGS, Drive Gear Ball and Roller Thrust, for Fords

(Ball thrust bearings to be installed at left side of differential in place of thrust washers)

Allopar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, O. "Allopar."
Anco—See Anderson Co.
Anderson Co., 282 E. St. Joseph St., South Bend, Ind. "Anco."
Bailey Co., Geo. D., 4500 Ravenswood Ave., Chicago, Ill.
Bersted Mfg. Co., 705 Mather St., Chicago, Ill. (See page 515.)
Esch, Ed., 2100 Michigan Ave., Chicago, Ill.
Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (See page 251.)
Graham Roller Bearing Corp., Coudersport, Pa., (See page 227.)
Green Dragon Co., 54 W. Randolph St., Chicago, Ill.
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributor for Graham Bearings.)
Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa.
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 595.)

BEARINGS, Drive Shaft Steady

Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo. "Whip-Not."
Whip-Not—See Carter Carburetor Co.

BEARINGS, Front Wheel, for Fords

(Special Ball and Roller Bearings for replacing Front Wheel Bearings)

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."
Allopar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, O. "Allo-par."
A-S-P—See Allied Steel Products Co.
B-N Longlife—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N Longlife." (See page 627.)
Burnell Engineering Co., 536 E. Water St., Milwaukee, Wis.
Caney-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 605 and 820.)
Coppins, Scott R., 329 S. Main St., Princeton, Ill. "Long Life."
Long Life—See Coppins, Scott R.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Standard."
Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
Roll-Rite Mfg. Co., 4 Broad St., Charleston, S. C.
Se-Co—See Stacks Engineering Co.
Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1163.)
Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 595.)

Stacks Engineering Co., 216 W. Ontario St., Chicago, Ill. "Se-Co."
Standard—See Marlin-Rockwell Corp.
Timken Roller Bearing Co., Canton, O. (See page 113.)

BEARINGS, Motor Boat Stern

Elsenbrandt, F. B., Light St., Baltimore, Md.
Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.
Monarch Valve Co., 113 Front St., Brooklyn, N. Y.

BEARINGS, Oilless

(Impregnated Wood or Graphite Bronze Bearings or Bushings)

Arguto Oilless Bearing Co., 157 W. Berkeley St., Philadelphia, Pa.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J. "Nigrum." (See page 309.)
Cleveland Graphite-Bronze Co., Cleveland, O. (See page 391.)
Dunham Co., Thos., Aurora, Ill. (See page 163.)
Massachusetts Oilless Bearings Co., Worcester, Mass.
Mechanical Devices Co., 23 E. La Salle St., Aurora, Ill.
Metaline Co., 43 Third St., Long Island City, N. Y.
Nigrum—See Bound Brook Oil-less Bearing Co.
Nolu Oilless Bearing Co., 6 E. Johnson St., Philadelphia, Pa.
O. & S. Bearing Co., 315 S. Artillery Ave., Detroit, Mich.
Randall Graphite Sales Co., 711-21 Fulton St., Chicago, Ill.

BEARINGS, PROPELLER SHAFT STEADY

—See Bearings, Drive Shaft Steady

BEARINGS, REAR AXLE THRUST, FOR FORDS

—See Bearings, Drive Gear Ball Thrust

BEARINGS, Reground Ball

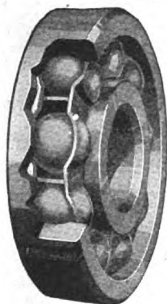
Ahlberg Bearing Co., 317-27 E. 29th St., Chicago, Ill.
Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa. (See page 407.)
Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.
New York Bearings Co., 311 W. 59th St., New York, N. Y.
Pacific Ball Bearing Co., 415 W. Pico St., Los Angeles, Cal.
Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
R. & L. Bearing Co., 1790 Broadway, New York, N. Y.
Sherwood, A. S., 258 W. 54th St., New York, N. Y.
Smith Bearings Co., L. C., 2200 Michigan Ave., Chicago, Ill. (Western Distributors for Bearings Co. of Penna., Philadelphia, Pa. (See page 100).)

BEARINGS, Roller

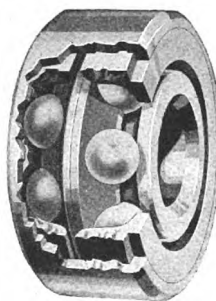
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Gilliam" Bearings.) (See page 243.)
Ahlberg Bearing Co., 317-27 E. 29th St., Chicago, Ill. "Trojan."

Everything is listed under the NOUN or principal word

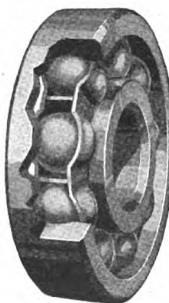
New Departure Ball Bearings



Radax



Double Row



Single Row

NEW DEPARTURE SERVICE covers the country like a blanket. All sizes and types of New Departures are carried in stock by all branch offices of the Bearings Service Company, who in turn distribute through over a thousand agencies located in every town of fair size in the United States. New Departures may be used to replace practically every type of American or foreign ball bearing. Apply to the address below which is most conveniently located to you.

DISTRIBUTORS

Bell Telephones

Atlanta	Bearings Service Co.	237 Peachtree St.	Ivy	1483
Baltimore	Bearings Service Co.	1041 Cathedral St.	Mt. Vernon	5400
Birmingham	Bearings Service Co.	613 S. 20th St.	Main	3020
Boston	Bearings Service Co.	1107 Commonwealth Ave.	Brighton	3730
Brooklyn	Bearings Service Co.	1176 Bedford Ave.	Lafayette	2072
Buffalo	Bearings Service Co.	1372 Main St.	Tupper	869
Chicago	Bearings Service Co.	2715 S. Michigan Ave.	Victory	8500
Cleveland	Bearings Service Co.	7026 Euclid Ave.	Rosedale	3129
Dallas	Bearings Service Co.	2005 Main St.	Main	2252
Denver	Bearings Service Co.	1357 Broadway	Champa	2837
Detroit	Bearings Service Co.	4147 Cass Ave.	Glendale	5413
Fresno, Cal.	Bearings Service Co.	907 Van Ness Ave.	Fresno	4602
Indianapolis	Bearings Service Co.	521 N. Meridian St.	Main	5122
Kansas City, Mo.	Bearings Service Co.	2435 McGee St.	Grand	829
Los Angeles	Bearings Service Co.	1156 S. Grand Ave.	Broadway	8053
Milwaukee	Bearings Service Co.	145 Oneida St.	Broadway	3979
Minneapolis	Bearings Service Co.	1115 Hennepin Ave.	Atlantic	8250
Newark	Bearings Service Co.	458 Broad St.	Branch Brook	687
New Orleans	Bearings Service Co.	755 St. Charles St.	Main	4059
New York City	Bearings Service Co.	239 W. 56th St.	Circle	1690
Oakland	Bearings Service Co.	2105 Broadway	Oakland	6402
Oklahoma City	Bearings Service Co.	1116 N. Broadway	Maple	475
Omaha	Bearings Service Co.	1812 Harney St.	Tyler	2844
Philadelphia	Bearings Service Co.	721 N. Broad St.	Poplar	3460
Pittsburgh	Bearings Service Co.	117 S. Highland Ave.	Hiland	1606
Portland, Ore.	Bearings Service Co.	24 N. Broadway	Broadway	1799
Richmond, Va.	Bearings Service Co.	1309 W. Broad St.	Madison	7180
Rochester	Bearings Service Co.	156 East Ave.	Chase	312
Salt Lake City	Bearings Service Co.	3300 Locust St.	Bomont	338
San Francisco	Bearings Service Co.	502 S. Main St.	Wasatch	9791
Seattle	Bearings Service Co.	1800 Van Ness Ave.	Franklin	410
Toronto	Bearings Service Co.	321 E. Pine St.	Elliott	67
		489 Yonge St.	North	6649

THE NEW DEPARTURE MANUFACTURING COMPANY

Executive Offices, BRISTOL, CONN. Ford Bldg., Detroit, Mich.
Chicago, Ill., 2721 South Michigan Avenue
(Conrad Patent Licensee)

Please mention The Automobile Trade Directory

BEARINGS, Roller (Continued)

American Roller Bearing Co., 416 Melwood Ave., Pittsburgh, Pa.
 Ball & Roller Bearing Co., 22 Maple Ave., Danbury, Conn. "Barbco."
 Barbco—See Ball & Roller Bearing Co.
 Bearings Co., of Penna., 684 N. Broad St., Philadelphia, Pa. (Distributors.) (See page 407.)
 Bock—See Standard Parts Co.
 Bower Roller Bearing Co., Detroit, Mich. (See page 155.)
 C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 97.)
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
 Dohner—See Ohio Metal Products Co.
 F. W. S.—See Stewart Mfg. Corp.
 Fulton-Houston Co., 1148 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 251.)
 Gilliam—See Spencer Metal Products Co.
 Gilliam Mfg. Co., Savannah Ave. & Eighth St. N. E., Canton, O.
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)
 Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 175.)
 Hart Roller Bearing Co., 25 Main St., Orange, N. J.
 Hyatt Roller Bearing Co., Detroit, Mich. (See page 157.)
 Makutchan Roller Bearing Co., Cass & Bissell Sts., Joliet, Ill. "Twinro."
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "S. R. B."
 Michigan Bearings Co., 1311 Woodward Ave., Detroit, Mich. (Dealers.) (See page 157.)
 Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 74.)
 Ohio Metal Products Co., Free Press Bldg., Detroit, Mich. "Dohner."
 S. R. B.—See Marlin-Rockwell Corp.
 Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1163.)
 Spencer Metal Products Co., Spencer, O. "Gilliam." (See page 508.)
 Standard Machinery Co., Auburn, R. I. (See page 135.)
 Standard Parts Co., Cleveland, O. "Bock." (See page 283.)
 Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."
 Timken Roller Bearing Co., Canton, O. (See page 113.)
 Trojan—See Ahlberg Bearing Co.
 Twinro—See Makutchan Roller Bearing Co.
 Whitney Bearing Corp., 536 Lake Shore Drive, Chicago, Ill. (See page 83.)
 Wright Roller Bearing Co., 20th St. & Indiana Ave., Philadelphia, Pa.

BEARINGS, STERN—See Bearings, Motor Boat Stern

BEARINGS, THRUST—See Bearings, Ball; also Bearings, Roller

BEDS or BERTHS, Car and Camp

(Special Beds or Berths for use either in the car or under tent when touring)

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Any-Kar—See Peoria Auto-Kot Co.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Autobed—See Tentobed Co.

Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.

Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.

Basford, H. B., 431 Sutter St., San Francisco, Cal.

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.

Colburn Mfg. Co., 1110 Ide Ave., Spokane, Wash.

Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.

Demoin—See Des Moines Tent & Awning Co.

Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoin."

Enterprise Bed Co., Hammond, Ind.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Handy Camp—See Tourist Auto Equipment Co.

McMillin—See Mackenzie-Waterhouse Co.

Mackenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "McMillan."

Miller Auto Bed Co., 1102 E. 15th St., Oakland, Cal.

Munro, F. G., 194 W. Santa Clara St., San Jose, Cal.

Peoria Auto-Kot Co., 115 N. Madison St., Peoria, Ill. "Any-Kar."

Perfection—See Pneumatic Mfg. Co.

Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 119.)

Schilling Co., L. F., Salem, O.

Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.

Tentobed Co., 3300 W. Jackson Blvd., Chicago, Ill. "Autobed."

Tourist Auto Equipment Co., Dahlgren, Ill. "Handy Camp."

Wolfe & Co., 417 Pontius Ave., Seattle, Wash.

BEDS or BERTHS, Car and Camp, for Fords

(Special beds or berths for use either in the car or under tent when touring)

Booth & Co., Sheldon, 1505 E. 52d St., Chicago, Ill.

McMillin—See Mackenzie-Waterhouse Co.

Mackenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "McMillan."

Schilling Co., L. F., Salem, O.

Wolfe & Co., 418 Pontius Ave., Seattle, Wash.

BELLS, Electric

(For use as a warning signal in place of horn)

Bunyan Mfg. Co.—See Loewus, Edwin H.

Cathedral Bell Mfg. Co., Cathedral & Chase Sts., Baltimore, Md.

Delta-Star Electric Co., 617-31 W. Jackson Blvd., Chicago, Ill.

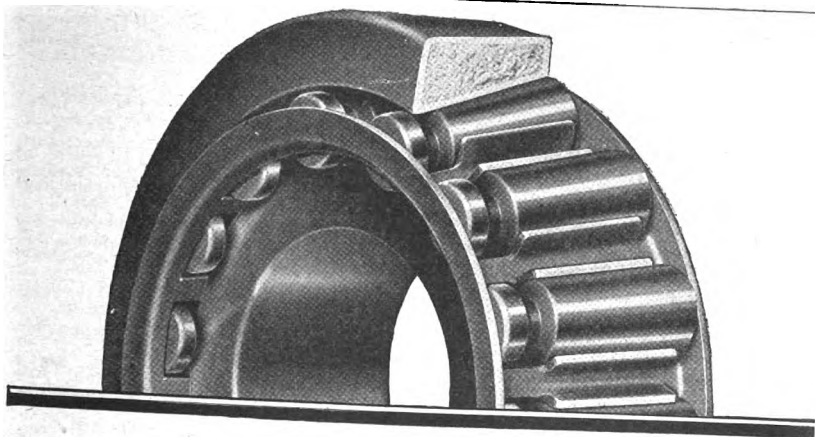
Electric Sentry Co., 118 S. Sixth St., Philadelphia, Pa.

Liberty—See Loewus, Edwin H.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributor for Bunyan Mfg. Co., Cleveland, O. "Liberty.")

Liberty—See Loewus, Edwin H.

Everything is listed under the NOUN or principal word



Timken Tapered Roller Bearings carry radial loads, thrust loads, and resultant loads uniformly and satisfactorily under the continuous and gruelling grind of automotive service.

The Timken Roller Bearing Co, Canton, Ohio

*Timken Tapered Roller Bearings for Passenger Cars, Trucks, Tractors,
Trailers, Farm Implements, Machinery, and Industrial Appliances*

TIMKEN
Tapered
ROLLER BEARINGS

Please mention The Automobile Trade Directory

BELLS, Electric, for Fords*(For use as a warning signal in place of horn)*

Bunyan Mfg. Co.—See Loewus, Edwin H.
 Liberty—See Loewus, Edwin H.
 Loewus, Edwin H., 304 W. 54th St., New York,
 N. Y. (Sole Distributor for Bunyan Mfg.
 Co., Cleveland, O. "Liberty.")

BELLS or GONGS, Mechanical*(For use as a warning signal in place of horn)*

Bevin Bros. Mfg. Co., East Hampton, Conn.
 East Hampton Bell Co., Walnut Ave., East
 Hampton, Conn.
 Mossberg Co., Frank, Attleboro, Mass.
 (See page 1069.)
 Reiter, G. C., Canton, O.

BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt**BELT CONNECTORS—See Fasteners, Belt****BELT COUPLINGS—See Fasteners, Belt****BELT DRESSING—See Dressing, Clutch****BELT FASTENERS—See Fasteners, Belt****BELT GUIDES FOR FORDS—See Guides, Fan Belt****BELT LACING—See Fasteners, Belt****BELTING, Leather***(Flat and Round Belting for Fan Belts; for Endless Fabric Belts—See Belts, Endless Fabric; for V-Belts—See Belts, V; for Spiral Wire Belts—See Belts, Spiral Wire)*

Adheso—See Hide, Leather & Belting Co.
 Almco—See Auto Leather Mfg. Co.
 Apex—See Palmer & Co.
 Auto Leather Mfg. Co., Arlington, N. J.
 "Kaenjay," "Almco," (See page 119.)
 Bailey-Fitwell Co., 1318 S. Grand Ave., Los
 Angeles, Cal. "Fitwell."
 Bantlin Co., Julius J., Cincinnati, O.
 Bonner & Barnwell, 30 Church St., New York,
 N. Y.
 Boston Leather Specialties, 30 Merrimac St.,
 Boston, Mass.
 Bradford Belting Co., 201 Walnut St., Cin-
 cinnati, O. "Monarch."
 Bull's Head—See Schlieren Co.
 Calasco—See Chicago Auto Leather Specialty
 Co.
 Casco—See Schlieren Co.
 Charter Oak—See Palmer & Co.
 Chibeco—See Chicago Belting Co.
 Chicago Auto Leather Specialty Co., 6637 S.
 Halsted St., Chicago, Ill. "Calasco."
 Chicago Belting Co., 112-25 N. Green St., Chi-
 cago, Ill. "Chibeco."
 Cino—See Mooney Belting Co.
 Climax—See Hudson Belting Co.
 Cocheco—See Williams & Sons.
 Coe & Brown, 304 George St., New Haven,
 Conn.
 Comber—See Rahmann & Co.

Detroit Clutch Cover Co., 17 Woodward Ave.,
 Detroit, Mich.

Detroit Leather Works, 803 E. Lafayette
 Blvd., Detroit, Mich. (See page 121.)

Dixie—See Schlieren Co.

Doerner & Co., 4127 32d St., Cincinnati, O.
 "Paragon."

Duxbak—See Schlieren Co.

Eagle—See Schlieren Co.

Eckhouse & Co., Walter, 616-32 S. Michigan
 Blvd., Chicago, Ill. (Factory Distributors
 for Page Belting Co., Concord, N. H.)

Endurmo—See Missouri Belting Co.

Evans-Lawrie Co., 708 Beacon St., Boston,
 Mass. (Eastern Distributors for
 "G. & K." Belts.) (See page 115.)

Fitwell—See Bailey-Fitwell Co.

G. & K.—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass.
 "G. & K."

Hide Leather & Belting Co., 233 S.
 Meridian St., Indianapolis, Ind. "Ad-
 heso," "Wetproof," "Kork-O-Grip."
 (See page 119.)

Hoo-Hoo—See National Leather Belt Co.

Houghton & Co., E. F., 240 W. Somerset St.,
 Philadelphia, Pa. "Vim."

Hudson Belting Co., 1-3 Eaton Pl., Worcester,
 Mass. "Climax," "Rival," "Hydro," "Mer-
 maid."

Hunt Co., Henry C., 261 Franklin St.,
 Boston, Mass. (See page 115.)

Hutchinson Bros. Cut Leather Co., 1926 W.
 Eighth St., Cincinnati, O.

Hydro—See Hudson Belting Co.

Jewell Belting Co., 55 Trumbull St., Hartford,
 Conn.

Johnson & Co., W. L., 124 Washington Ave.,
 Endicott, N. Y. "Tuffide."

Kaenjay—See Auto Leather Mfg. Co.

Kork-O-Grip—See Hide Leather & Belting Co.

Latigo—See Perkins-Campbell Co.

Leather Parts Co., 1619-21 Prospect St., In-
 dianapolis, Ind.

Leather Products Co., Gest & Evans Sts.,
 Cincinnati, O.

Mermaid—See Hudson Belting Co.

Missouri Belting Co., 1021-29 S. Grand Ave.,
 St. Louis, Mo. "Endurmo."

Monarch—See Bradford Belting Co.

Mooney Belting Co., 844 W. Sixth St., Cin-
 cinnati, O. "Cino."

National Leather Co., 161 South St., Boston,
 Mass.

National Leather Belt Co., 242 E. 38th St.,
 New York, N. Y. "Hoo-Hoo."

Norwich Belt Mfg. Co., N. Main St., Nor-
 wich, Conn.

Page Belting Co.—See Eckhouse & Co.

Palmer & Co., N., 571 Iranistan Ave., Bridge-
 port, Conn. "Charter Oak," "Apex."

Paragon—See Doerner & Co.

Perkins-Campbell Co., Cincinnati, O.
 "Latigo." (See page 115.)

Rahmann & Co., Geo., 21 Spruce St., New
 York, N. Y. "Comber."

Ranville Co., F., 241-49 Pearl St., Grand Rap-
 ids, Mich.

Reinhold Belting & Supply Co., 491 Atlantic
 Ave., Brooklyn, N. Y.

Rhoads & Sons, J. E., 12 N. Third St., Phila-
 delphia, Pa. "Tannate."

Rival—See Hudson Belting Co.

Rock Oak—See Schlieren Co.

Royal—See Schlieren Co.

Schlieren Co., Chas. A., 76 Ferry St., New
 York, N. Y. "Duxbak," "Bull's Head," "Rock
 Oak," "Royal," "Eagle," "Casco," "Dixie."

Everything is listed under the NOUN or principal word

EVANS-LAWRIE COMPANY

Replacement distributors for manufacturers of high grade standard parts

Graton & Knight Fan Belts
Clutch Leathers and Specialties

McCord Gaskets Fitzgerald Gaskets
Hayes Wire Wheels Houk Wire Wheels

Spring Bolts, Spindle Bolts, Bushings
Axle Shafts, etc., etc.

*Manufacturers of standard parts desirous of
high grade replacement distribution
are invited to correspond with
us immediately*

EVANS LAWRIE COMPANY
AUTOMOTIVE SPECIALTIES



708 BEACON ST.
BOSTON, MASS.

Henry C. Hunt Company

Manufacturers of

Leather Fan Belting
Leather "V" Belting

Detachable Fan Belts
Endless Fan Belts

Knuckle and Joint Boots
Leather Lacing

Leather Clutch Facings
Leather Straps

Leather Washers
Clutch and Belt Dressing

261 Franklin St., Boston, Mass.



A Battery that

Sells
Itself

- Every motorist wants a Lyons Storage Battery—
- because he gets a written two year guarantee.
- because the seal assures a first hand battery.
- because our patented Reinforced Triangle Grid assures greater strength, longer life.

Territory now open for distributors and dealers.

Write for attractive proposition.

A. H. LYONS & COMPANY
Stephen Girard Bldg. PHILADELPHIA

LYONS STORAGE BATTERY



Watch for this tag on

- | | |
|---------------------|---------------------|
| Tire Covers | Straps |
| Seat Covers | Leather Cases |
| Radiator Covers | Catalog Cases |
| Top Covers | Boots |
| Tool Bags and Kits | Bottle Cases |
| Textile Accessories | Leather Accessories |
| Special Work from | Blue Prints |

THE PERKINS-CAMPBELL CO.
Cincinnati, O.

New York Office
89 Chambers Street

Chicago Office
1329 S. Michigan Avenue

Please mention The Automobile Trade Directory

BELTING, Leather (Continued)

Tannate—See Rhoads & Sons.
 Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.
 Tumida—See Johnson & Co.
 Vim—See Houghton & Co.
 Weatherhead-Thompson Co., Pawtucket, R. I.
 Wetprufe—See Hide, Leather & Belting Co.
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Cochecho."
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, Aviators' Safety

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.)
 (See page 253.)
 Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

BELTS, COTTON—See Belts, Endless Fabric**BELTS, Endless Fabric**

(For Leather Belts—See Belting, Leather; also Belts, V; for Wire Belts—See Belts, Spiral Wire)

A-B-C—See American Brake-Lining Co.
 Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill.
 Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Vulcan."
 (See page 679.)
 Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y.
 (See page 679.)
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 679.)
 Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabrutex."
 Brophy Belting & Supply Co., Perry St., Madison, Ind.
 Brown Mfg. Co.—See Cassidy Co.
 Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for Brown Mfg. Co., Arthur S. Tilton, N. H. "Tilton.")
 Curry Co., J. W., 2615 Cummins St., Cincinnati, O.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Fabrutex—See Bond Co.
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."
 General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.
 Germantown—See Smith Belting Co.
 Gilmer Co., L. H., Philadelphia, Pa.
 (See page 117.)
 Holdfast—See Diamond Holdfast Rubber Co.
 Lakewood Fabric Belting & Mfg. Co., 1518 Highland Ave., Lakewood, O.
 Lockwood Mfg. Co., Kansas City, Mo.
 (See page 985.)
 Main Belting Co., 1219 Carpenter St., Philadelphia, Pa.

Master-Cord Belt Co., 3102 Downing St., Denver, Colo.
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Motor Belt & Mfg. Co., Kansas City, Mo. "Old Hickory." (See page 121.)
 Multibestos Co., Walpole, Mass.
 (See page 615.)
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
 Old Hickory—See Motor Belt & Mfg. Co.
 Perfection—See Geisel Co.
 Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O.
 Powers Mfg. Co., Waterloo, Iowa.
 (See page 581.)
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Rie-Nie—See Durkee-Atwood Co.
 Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuflex."
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco."
 (See page 121.)
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. "Germantown." (See page 309.)
 Tingley & Co., Chas. O., Ross St. & St. George Ave., Rahway, N. J.
 Tilton—See Cassidy Co.
 Tuflex—See Rochester Woven Belting Corp.
 Vulcan—See Advance Packing & Supply Co.
 Vulco—See Gates Rubber Co.
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, ENDLESS FABRIC, FOR FORDS—
 See Belts, Fan

BELTS, Fan, for Fords
 Adjustable and endless belts of Leather, Rawhide and Woven Fabric)

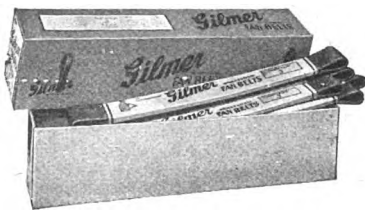
Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill.
 Almco—See Auto Leather Mfg. Co.
 Auto Leather Mfg. Co., Arlington, N. J. "Kaejay," "Almco." (See page 119.)
 Automotive Leather Products Co., Park Ave. & 130th St., New York, N. Y. "Sho-Tan."
 Avey Leather Goods Mfg. Co., 904-16 Evans St., Cincinnati, O.
 Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Bantlin Co., Julius J., Cincinnati, O.
 Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Beaver—See Mechanical Rubber Co.
 Blue Ribbon—See McMonies, J. R.
 Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Sterling."
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Central Brass & Fixture Co. Segler & Hughes Sts., Springfield, O.
 Champney—See Mitchell & Smith.
 Chibeco—See Chicago Belting Co.
 Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Krome."
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cloud Accessories Corp., 1403 S. Wabash Ave., Chicago, Ill. "Morgancord."
 Coe & Brown, 204 George St., New Haven, Conn.

Everything is listed under the NOUN or principal word

Throughout the U. S.

\$1.00

**WITH THESE EXCEPTIONS:
FORDS 50c MAXWELLS \$1.25**



Packed in cartons of 10 belts of one size. 29 groups comprise the complete stock and cover every car that uses a flat type fan belt.

Ask your jobber.

L. H. GILMER CO.

PHILADELPHIA, PA.

The exact belt for any car is easily ascertained by referring to the chart below.

MARK	YEAR	MODEL	MARK	YEAR	MODEL	MARK	YEAR	MODEL
GROUP 1			GROUP 7			GROUP 19		
Ford	1911-16	T	Buick	1918	E44-E45-46-47-49-50	Columbia	1920-21	C-8
National	1917-18-19	Highway 12	Buick	1919	Light Type	Davis	1921-21	C-9
Stearns-Knight		Right	Buick	1920	H44-E45-E46-E47-49-50	DeSoto	1920	6 cyl. D-G-H-K
						Huffman	1920-21	
						Johnson	1920	6-38 with H-S Motor
GROUP 2			GROUP 8			Lexington	1920	8
Ford	1917-18-19-20	T	Maxwell	1919-17	25	Mitchell	1918-19-20-21	D40-E40-E42-F40
					C40 and C42	Nelson	1920	D
						Westcott	1920-21	Cas
GROUP 2A			GROUP 9			GROUP 20		
Ford	1921	T Com. Aug. 1, 1920	Maxwell	1918-19		Climber	1919-20	T & R
						Jeffery	1917	W
GROUP 3			GROUP 10			Marmon	1916-17	34
Allen	1915-10-17-18-19	34-37-41	Elfin	1919-20-21	J & K-K1	Mercor	1917-18-19	24
Buick	1914	B24-B25-B30-B37-B38-195	Huffman	1920-21	"Minute Man Six"		20-21	"
Buick	1913	C24-B36-C30-C37-C54-C55-D37	Lechman	1917-18-19	"	Overland	1917-18	Model 85-4 and a new one to be added
Chrysler	1916	D54-D55	Rayo	1915-16-17-18-19	"	Overland	1918-19	All model 85-4's after Oct. No. 104, 400 in 1918
Packard	1916-17-18-19			1917-18-19-20	P-A-P-B-P-C			
Dues	1917-18-19-20-21	All Models						
Eaton	1920-21	12-12C-17-17B-39						
Gardner	1920	4 cyl. D-G-H-K						
Gervino	1920-21	A						
Hamley	1918	Model 72						
Knight	1921	Model 90 up to car No. 104,999 in 1918						
Overland	1917-18	A						
Patterson	1918	Model 72						
Pilot	1921	6-50						
GROUP 4			GROUP 11			GROUP 21		
Briscoe	1917-18-19	B-24	American	1920	C	Kearf	1918-20-21	
Chrysler	1920		Anderson	1916-17-18-19-20	C & Silent Six	Grant	1920-21	
Dues	1916-16-17-18-19-20-21	10-10C-12A-12AC-15-15B-17A-17AB	Chandler	1914-15	All Models	King	1915-16-17-18-19-20-21	D-E-E-F-F-G-H
Elfin	1916-17-18-19	10-10C-12A-12AC-15-15B-17A-17AB	Columbia	1916-17-18-19-20	Runabout Motor			
Grant	1917-18-19	T & V	Davis	1916-17-18-19-20	8-18 and 20			
Holler	1918	Six	Haynes	1920-21	30-32-34-37-47-48-49			
Woods	1918		Johnson	1920	6-38 with 7V Motor	Allen	1920-21	43
			Kiesel	1916-17-18	21-44	Buick	1921	6-38 with 44-46-47-48-49
			Liberty	1916-17-18-19	Point Six	Chalmers	1921	C-70
			Lomb	1920-21	Big Six and Special Six	Moon	1920	40-50
			Norma	1918-20	A & B	Revere	1918-19-20	C-15
			Paige	1918	6-39	Templar	1921	4-45
			Patterson	1917-18	6-39			
			Tulsa	1920	With 7V Motor			
				1920	E1-E2-E3			
GROUP 5			GROUP 13			GROUP 22		
Apperson	1916-17-18-19	6	Reo	1915-16-17-18-19 M & N 6 cyl.		King	1915-16-17-18-19-20-21	D-E-E-F-F-G-H
Jeffrey	1919-19	671						
National	1917-18-19	671						
Overland	1917-18-19	671						
Paige	1918	80-82						
Pilot	1921	6-40						
Stearns	1917-18-19-20-21	15 Small Six						
Willys-Knight	1916	84						
Willys-Knight	1920-21	20						
GROUP 6			GROUP 14			GROUP 23		
American	1917	A	Maxwell	1915	22-25 8-11 Starter	Chalmers	1915	26-26B-26C-29-32A
Albion	1918	B	Dorris	1921	22-28	Chalmers	1916	32B
Subaru	1919	C	Maxwell	1915	6-20 G & D Starter	Dorris	1918-20	6-40
Clyatt	1916-17-18-19	20				Liberty	1918-20	10B-20 After 37,400 cars
						Paige	1918-20-21	6-55 After 41,500 cars

Please mention The Automobile Trade Directory

BELTS, Fan, for Fords (Continued)

- Curry Co., J. W., 2615 Cummins St., Cincinnati, O.
- Dafoed Co., 729 Atlantic Ave., Boston, Mass.
- Detroit Clutch Cover Co., 17 Woodward Ave., Detroit, Mich.
- Detroit Leather Works, 803 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
- Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
- Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)
- E-Z-Put-On—See Paulus, Alfred H.
- Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 115.)
- Federal Asbestos Co., 149 Hamburg Ave., Paterson, N. J. "Fordbestos."
- Flex-O-Tyte—See Stephens Rubber Co.
- Fordbestos—See Federal Asbestos Co.
- G. & K.—See Graton & Knight Mfg. Co.
- Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
- Gelsel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."
- General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.
- Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)
- Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."
- Hager & Son, Chas., 1926 Broadway, New York, N. Y.
- Hagstrom Bros. Mfg. Co., Lindsborg, Kans.
- Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Adheso." (See page 119.)
- Holtite Spring Belt Co., 195 Paterson St., Paterson, N. J.
- Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)
- Indigan—See National Leather Co.
- Jesop & Thompson, 1431 S. Michigan Ave., Chicago, Ill.
- Kaenjay—See Auto Leather Mfg. Co.
- Krome—See Chicago Rawhide Mfg. Co.
- Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, N. J.
- Latigo—See Perkins-Campbell Co.
- Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
- Linsco—See Lins Mfg. Co.
- McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind.
- McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Blue Ribbon."
- Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco," "Beaver."
- Mikewell Brothers Company, 150 N. La Salle St., Chicago, Ill. (See page 315.)
- Miracle—See Rawhide Products Co.
- Mitchell & Smith, Framingham, Mass. "Champney." (See page 119.)
- Morgancord—See Cloud Accessories Corp.
- Multibestco Co., Walpole, Mass. (See page 615.)
- Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Nathigo." (See page 313.)
- Nathigo—See Nathan Novelty Mfg. Co.
- National Leather Co., 161 South St., Boston, Mass. "Indigan."
- National Leather Belt Co., 342 E. 38th St., New York, N. Y.
- Norwich Belt Mfg. Co., N. Main St., Norwich, Conn.
- Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, Ohio.
- Page Belting Co.—See Eckhouse & Co.
- Palmer & Co., N., 671 Iranistan Ave., Bridgeport, Conn.
- Paragon—See Doerner & Co.
- Paulus, Alfred H., 2507-11 Potter St., Philadelphia, Pa. "E-Z-Put-On."
- Perfection—See Gelsel Co.
- Perkins-Campbell Co., Cincinnati, O. "Latigo." (See page 115.)
- Powers Mfg. Co., Waterloo, Ia. (See page 581.)
- Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
- Rawhide Products Co., 1834 Broadway, New York, N. Y. "Miracle."
- R-E—See Roose Mfg. Co.
- Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
- Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.
- Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuflex."
- Roose Mfg. Co., 827-83 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
- Rose Mfg. Co., Frank, Hastings, Neb. (See page 701.)
- Rugg & Co., E. L., Newark, O.
- Rusco—See Russell Mfg. Co.
- Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)
- Self Adjusting Belt Co., Watertown, S. Dak.
- Sensation—See Voorhees Rubber Mfg. Co.
- Sho-Tan—See Automotive Leather Products Co.
- Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Flex-O-Tyte."
- Sterling—See Bond Co.
- Thermoid Rubber Co., Trenton, N. J.
- Tuflex—See Rochester Woven Belting Corp.
- Usco—See Mechanical Rubber Co.
- Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Sensation."
- Vulco—See Gates Rubber Co.
- Wetprufe—See Hide Leather & Belting Co.
- Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
- Williams & Sons, I. B., 9 Orchard St., Dover, N. H.
- Woodworth Mfg. Co., 1-29 Starr Ave., Birmingham, N. Y.

BELTS, Spiral Wire

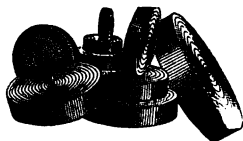
- (For Leather Belts—See Belting, Leather; also Belts, V; for Fabric Belts—See Belts, Endless Fabric)
- Calcutt's—See Gardner Wire Co.
- Gardner Wire Co., 5448 Race Ave., Chicago, Ill. "Calcutta."
- Hebb, Geo. A., 70 William St., Newark, N. J.
- Kelley, A. F., 178 S. Main St., Providence, R. I. "Kello."
- Kello—See Kelley, A. F.
- Self Adjusting Belt Co., 430 First Ave., N. E., Watertown, S. Dak.
- Webb Mfg. Co., 245-47 N. J. R. E. Ave., Newark, N. J. (See page 839.)
- Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 649 and 819.)
- Wilson, Robert P., 30 Clinton St., Newark, N. J.

FAN BELTS

FAN BELTS



A Fan Belt for Every Car



Flat Belting
"V" Shaped Belting
Laminated Belting

Western Union
Code

Auto Leather Mfg. Co., Inc.
ARLINGTON, N. J.



The



Line

of Leather Fan Belts and
Leather Parts

for Cars, Trucks, Tractors

Wetprufe Flat Fan Belting
in Handy Rolls

Vee Sol, "V" Fan Belting

Vee Flex, "V" Fan Belting

Fan Belts for all
Automotive Products.

Leathertex Cone Clutch Facings;
Disc Clutch Facings.

Anti-Squeak Frame Padding;
Leather Tire Straps and Cut
Lacings.

Discs, Boots, Gaskets,
Washers, etc.

Write for samples and prices.

Hide Leather & Belting Co.
233 S. Meridian Street, Indianapolis, U. S. A.

A FAN BELT THAT'S DIFFERENT

Here is a belt that has eliminated
those annoyances so common in
other belts—such as stretching,
slipping, breaking, etc.

METAL—LEATHER—FIBRE—BELT



PATENTED

OCT. 22, 1918

CROSS SECTION

CHAMPNEY LINK "V" BELT

The "Champney" V-Link-Belt is
made of metal, fibre and leather—
a combination that spells

PERFECTION

CAR MANUFACTURERS

Our Equipment Proposition
will interest you

JOBBERS

Write us for Information Sheet showing
specifications for different cars

MITCHELL & SMITH, Inc.
FRAMINGHAM, MASS.

Manufacturers and Owners of Patents

The Best Auto Bed Made!

Naturally, then, the Best Seller, which for Dealers means
More PROFITS. The Popularity of the

"Red Seal" Auto-Porch Bed and Tent

is due to their many points of Superiority: The Bed Can-
not Sag; It is Light, Compact and Durable. Can be set up
with or without car, or over the seats WITHIN any 5-passen-
ger Auto in two minutes. Demanded by tourists and camp-
ers everywhere because of its convenience and comparatively
low price.

Live Wire Dealers! Send for descriptive literature, illustrating
superior features of this bed and tent. Generous discount to
reliable dealers.

The Schaefer Tent & Awning Co., Denver, Colorado

Please mention The Automobile Trade Directory

BELTS, V

(For Flat or Round Leather Belts—See Belting Leather; for Fabric Belts—See Belts, Endless Fabric; for Wire Belts—See Belts, Spiral Wire)

Algo—See Auburn Leather Goods Co.

Almco—See Auto Leather Mfg. Co.

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algo."

Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco." (See page 119.)

Automotive Leather Products Co., Park Ave. & 130th St., New York, N. Y. "Sho-Tan"

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Bantlin Co., Julius J., Cincinnati, O.

Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Calsco—See Chicago Auto Leather Specialty Co.

Chibeco—See Chicago Belting Co.

Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calsco."

Chicago Belting Co., 113-35 N. Green St., Chicago, Ill. "Chibeco."

Chicago Rawhide Mfg. Co., 1801 Elston Ave., Chicago, Ill.

Coe & Brown, 304 George St., New Haven, Conn.

Craig Mfg. Co., 803 N. 16th St., Cedar Rapids, Ia.

Crowe—See Mechanical Belt Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. "Flexo." (See page 121.)

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 115.)

Flexo—See Detroit Leather Works.

Globelt—See United & Globe Rubber Co.

Granite—See Rahmann & Co.

Graton & Knight Mfg. Co., Worcester, Mass. "Spartan."

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Vee Sol," "Vee Flex." (See page 119.)

Hildick, Thomas H., 256 Market St., Newark, N. J.

Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)

Kaenjay—See Auto Leather Mfg. Co.

Kontak—See Rahmann & Co.

Latigo—See Perkins-Campbell Co.

Master Link Belt Mfg. Co., Oklahoma City, Okla.

Mechanical Belt Co., 4032 Ravenswood Ave., Chicago, Ill. "Crowe."

Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.

Motor Belt & Mfg. Co., Kansas City, Mo. "Old Hickory." (See page 121.)

National Leather Belt Co., 342 E. 38th St., New York, N. Y.

National Leather Co., 161 South St., Boston, Mass.

Old Hickory—See Motor Belt & Mfg. Co.

Page Belting Co.—See Eckhouse & Co.

Perkins-Campbell Co., Cincinnati, O. "Latigo." (See page 115.)

Powers Mfg. Co., Waterloo, Ia. (See page 581.)

Rahmann & Co., Geo., 31 Spruce St., New York, N. Y. "Kontak," "Granite."

Ranville Co., F., 241-49 Pearl St., Grand Rapids, Mich.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Rie-Nie—See Durkee-Atwood Co.

Schieren Co., Chas. A., 76 Ferry St., New York, N. Y.

Sho-Tan—See Automotive Leather Products Co.

Spartan—See Graton & Knight Mfg. Co.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)

United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "Globelt."

Vee Flex—See Hide Leather & Belting Co.

Vee Sol—See Hide Leather & Belting Co.

Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

BENCH LATHES—See Lathes, Bench

BENCH SHEARS—See Shears, Bench

BENCH VISES—See Vises, Machinists

BENCHES, Motor Driven Saw

Whitney & Son, Baxter D., Winchendon, Mass. (See pages 467 and 841.)

BENDERS, Angle

(Hand Power)

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "X L C R"

Hinman & Co., D. A., Sandwich, Ill.

Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.

X L C R—See Excelsior Tool & Machine Co.

BENDING MACHINES—See Machines, Wood Bending

BENDINGS, Wood

(For Boat Bunks; for Metal Boat Bunks—See Bunks, Metal Boat)

Campbell & Dann Mfg. Co., Tullahoma, Tenn.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Pfau Mfg. Co., Cincinnati, O.

Shepard & Sons, H. G., James & River Sts., New Haven, Conn.

BERTHS, CAR—See Beds or Berths, Car

BEVEL GEARS FOR FORDS—See Gears, Special Ratio

BILGE BAILERS—See Bailers, Motor Boat, Automatic; also Pumps, Motor Boat, Engine Driven Bilge

BILGE PUMPS—See Pumps, Motor Boat Bilge

BILLIKENS, RADIATOR—See Ornaments, Radiator

Everything is listed under the NOUN or principal word

Old Hickory CORD BELTS

Flat and V-Shaped — "Built to Last"



Dealers say they have yet to find an owner of a pleasure car, truck or tractor who doesn't want an Old Hickory Cord Belt the moment he sees one. Jobbers say that Old Hickory Cord Belts are the first items of the orders — "pullers for more business."

Each belt is faultlessly manufactured from heavy Sea Island Fabric, treated with an asbestos compound that holds the belt to the pulleys without chance for friction. OLD HICKORY CORD BELTS are made for every make and model of motor car. They stand up under hard punishment. They are endless. They last!



Motor Belt & Manufacturing Company

1000 Broadway
NEW YORK 10, N.Y.

KANSAS CITY
MISSOURI

Write for literature and Old Hickory Cord Belts. See them in use at the top of the page.

RUSCO PRODUCTS

Tests by engineers result in the selection of RUSCO Products as standard equipment for many of America's foremost cars.

Rusco Brake Lining
Disc and Cone Clutch Facing
Endless Fan Belts
Anti-Squeak Webbing
Woven Strapping for Auto
Tops—and Tire Straps

For Ford Cars:

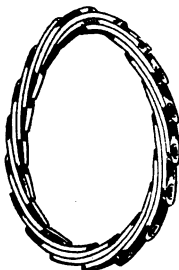
Transmission Lining
Endless Fan Belts
Cam Brakes

The Russell Manufacturing Co.

508 Russell Ave., Middletown, Conn.
New York City Chicago Detroit

FLEXO Laminated "V" BELTS

Protected by U. S. and Foreign Patents



FLEXO BELTS are made of sections, cut only from solid center back belting hides and are assembled with steel copper-plated rivets. They are made endless with machine screws and nuts and can be readily lengthened, shortened or adjusted without special tools.

FLEXO BELTING in $\frac{5}{8}$ " and $\frac{3}{4}$ " widths in the Oak Leather on 50 or 100-foot spools is the most popular with the Supply Dealers. Motor Car Dealers usually buy Flexo Belts made up to fit the cars they sell, either open or endless.

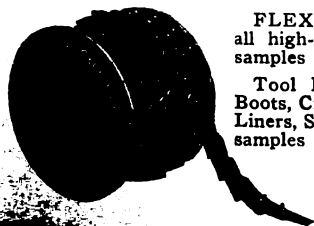
FLEXO BELTS are giving complete satisfaction on all high-grade cars, trucks and tractors. Prices and samples on request.

Tool Rolls, Universal Joint and Steering Knuckle Boots, Crank Handle Holders, Magneto Covers, Straps, Liners, Shims and all leather parts, made to order. Send samples or blue prints for quotations.

DETROIT LEATHER WORKS

683 East Lafayette Boulevard

DETROIT, MICH.



Please mention The Automobile Trade Directory

BILLING SYSTEMS—See Books, Accounting

BINDERS, LOOSE LEAF—See Books, Accounting and Cost System

BINDING, Mat and Carpet

(Metal Binding for Carpet, Linoleum or Rubber Mats)

Douglas & Lomason Co., 5886 Lincoln Ave., Detroit, Mich.

BINDINGS, Upholstery

Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.

Bauer Bros. Mfg. Co., 1035-37 Richmond St., Cincinnati, O.

Boulevard—See Woodward & Cochey.

Carter Co., George R., Connersville, Ind.

Cincinnati Welt Co., 118 Opera Pl., Cincinnati, O.

Detroit Narrow Fabric Co., 46 Lafayette St., E., Detroit, Mich.

Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.

Hamilton-Wade Co., 52 Haverhill St., Brockton, Mass.

Indianapolis Saddlery Co., 237 S. Meridian St., Indianapolis, Ind.

Jansen Mfg. Co., 14th Ave. & Howard St., Detroit, Mich.

Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.

Landers Bros. Co., Dept. A 2, Toledo, O. (See page 1049.)

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

United Stay Co., Kendall Sq., Cambridge, Mass.

Woodward & Cochey, 550 Broad St., Lynn, Mass. "Boulevard." (See page 123.)

BINS, SHOP—See Racks, Metal Tool

BITS, BATTERY STRAP—See Drills and Bits, Battery Strap

BLADES, Hack Saw

(For Hack Saw Frames—See Frames, Hack Saw)

A. A. A.—See Atkins & Co.

Arrow Head—See Jennings & Co.

Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A. A. A."

Blancette Co., L. C., 10-13 Thomas St., New York, N. Y. (Sole Distributors for Blancette Twist Drill & Tool Co., Taunton, Mass.)

Blancette Twist Drill & Tool Co.—See Blancette Co.

Boston Saw & Tool Co., 224 Harrison Ave., Boston, Mass. "Knoxall."

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."

Eureka—See Thompson & Son Co.

Goodell-Pratt Co., Greenfield, Mass.

Griffin Co., G. W., Franklin, N. H.

Jennings & Co., C. E., 71-73 Murray St., New York, N. Y. "Arrow Head."

Knoxall—See Boston Saw & Tool Co.

Milford—See Thompson & Son Co.

Modern Equipment Co., 27 Haymarket Sq., Boston, Mass.

Napier Saw Works, Myrick Bldg., Springfield, Mass.

Peerless Machine Co., 1615 Racine St., Racine, Wis.

Racine Tool & Machine Co., 1439 Junction Ave., Racine, Wis.

Red Devil—See Smith & Hemenway.

Simplex Tool & Supply Co., 137 Oliver St., Boston, Mass.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Stapf & Co., John B., Dunkirk, N. Y.

Starrett Co., L. E., Athol, Mass.

Sterling—See Diamond Saw & Stamping Works.

TT.—See Thompson & Son Co.

Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford." "Eureka."

"XL." "TT."

Utility—See West Haven Mfg. Co.

Victor Saw Works, 1 Rowland Ave., Springfield, Mass.

West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "Utility."

XL—See Thompson & Son Co.

BLANKS, GEAR—See Gears, Blank

BLOCKS, CAR EXTRACTING—See Winches and Blocks

BLOCKS, CAR SHIPPING—See Chocks, Car Shipping

BLOCKS, CHAIN—See Blocks or Hoists, Chain

BLOCKS or HOISTS, Chain

(For Portable Cranes—See Cranes, Portable)

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. "Union."

Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O. "Cyclone."

Cyclone—See Chisholm-Moore Mfg. Co.

Ford Chain Block & Mfg. Co., Second & Diamond Sts., Philadelphia, Pa. "Tribloc."

Franklin Portable Crane & Hoist Co., 218 West Park, Franklin, Pa.

Harrington Son & Co., Edwin, 17th & Callowhill Sts., Philadelphia, Pa. "Peerless."

Jackson Truck Hoist Co., Belleville, Ill.

Peerless—See Harrington Son & Co.

Reading Chain & Block Corp., 2140 Adams St., Reading, Pa.

Round, & Son, D., 7625 Broadway, Cleveland, O. "Simplex." "Superior."

Simplex—See Round & Son.

Simplex—See Speidel, J. G.

Speidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa. "Simplex."

Superior—See Round & Son.

Tribloc—See Ford Chain Block & Mfg. Co.

Union—See Channon Mfg. Co.

Wright Mfg. Co., Lisbon, O.

Yale & Towne Mfg. Co., Stamford, Conn. (See page 599.)

BLOCKS, VALVE END SQUARING

(Hardened Steel Blocks Used to Clamp Valve Stems in Vise When Filing Ends)

Hinckley-Myers Co., Water St., Jackson, Mich.

BLOW TORCHES—See Torches, Gasoline

Everything is listed under the NOUN or principal word

Willard

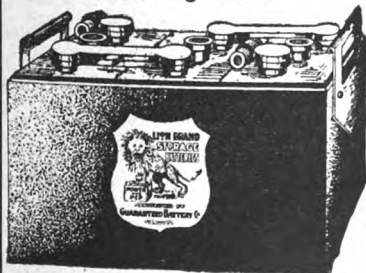
THREADED
RUBBER
BATTERY

Standard Equipment on 174 American
Cars and Trucks

LION BRAND
STORAGE BATTERIES



Give a Positive Assurance of the Greatest
"POWER and PEP"
With Longest Life



Manufacturers of high grade Storage Batteries for
Auto, Truck, Tractor, Launch and House Lighting
Plants.

Write for our New Catalog and Agency Proposition.
Guaranteed Battery Company
2017-2025 Lucas Avenue
St. Louis, Mo.

Gimps Welts Bindings

With a special process hot
glue fold—stays down for-
ever—and cord will not fall
out of the welt.

Working samples sent free
from any material, grain and
finish—leather or leather
substitute.

Woodward & Cochey, Inc.
550 Broad Street Lynn, Mass.

Adjustable Boring Cutters and Bars



and Bars pay for themselves very quickly out of the money they save in the tool room.
Write us to-day for details.

The Madison Adjustable Boring Cutters and Bars replace reamers on automatic machines, turret lathes, boring mills, etc. They can be sharpened and set to within .00025 inch in less than five minutes.

These cutters do the work more accurately than reamers, insuring absolutely straight holes of any size you may require.

Made in 45 sizes—from 1/4 to 5 inches in diameter. Larger sizes on application.
The Madison Adjustable Boring Cutters

MADISON MANUFACTURING CO.

Corner Spring and Elton Sts.

MUSKEGON, MICH.

Please mention The Automobile Trade Directory

BLOWOUT PATCHES—See *Sleeves, Tire Repair*; also *Shoes, Inner Tire*

BLUE, Mechanics'

(For use when adjusting bearings)

Benoit, Constant A., Brooklyn, N. Y.
(See page 227.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See *Van Cleef Bros.*

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
(See page 277.)

Norwesco—See *Northwestern Chemical Co.*

Rie-Nie—See *Durkee-Atwood Co.*

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

BLUE PRINTING MACHINES—See *Machines, Blue Printing*

BOARD BRACES FOR FORDS—See *Braces, Running Board*

BOARDS, COWL, FOR FORDS—See *Cowls, Dash*

BOARDS, DASH—See *Dashes, Wood*

BOARDS, FLOOR—See *Parts, Wood Automobile*

BOARDS, FLOOR FOR FORDS—See *Boards, Floor or Foot*

BOARDS, Floor or Foot for Fords

Mengel Co., Louisville, Ky.

Williams Mfg. Co., Gloyd Bldg., Kansas City, Mo.

BOARDS, INSTRUMENT, FOR FORDS—See *Cowls, Dash*

BOARDS, Running

(Pressed or Stamped Steel, Wood and Linoleum or Rubber Covered Running Boards)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New York and New England Distributors for Standard Boards.)
(See page 243.)

Bosert Corp., Utica, N. Y.
(See page 587.)

Brummeler-Ruggles Metal Products Co., 1216 Iowa Ave., S. W., Grand Rapids, Iowa.

Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 141.)

Buffalo Pressed Steel Co., Buffalo, N. Y.

Champion Milk Cooler Co., 53-60 Owego St., Cortland, N. Y.

Cochran Plaston Corp., Detroit, Mich.
(See page 709.)

Crosby Co., Buffalo, N. Y. (See page 593.)
Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.

Detroit Pressed Steel Co., Detroit, Mich.
(See page 1053.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Erdle Perforating Co., 171 York St., Rochester, N. Y. (See page 647.)

Forsyth Bros. Co., Harvey, Ill.
(See page 1055.)

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 335.)

Hydraulic Pressed Steel Co., of The Hydraulic Steel Co., Cleveland, O.
(See page 421.)

Lamco—See *Lehman Mfg. Co.*

Lawson Co., F. H., Dept. D, Cincinnati, O.
(See page 125.)

Lehman Mfg. Co., 310 Fourth St., Cammerton, Ind. "Lamco." (See page 143.)

Mengel Co., Louisville, Ky.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

Michigan Stamping Co., 11631 Mack Ave., Ypsilanti, Mich.

Michigan Truck & Lumber Co., Holly, Mich.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.

Parish & Bingham Corporation, Cleveland, O.

Pfau Mfg. Co., Cincinnati, O.

Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.

Spiro Mfg. Co., C. 63-72 E. 131st St., New York, N. Y. "Uniq."

Standard Steel Box Co., Villars Ave., Bridgeville, Pa.

Standley Skid Chain Co., Boone, Iowa.
(See page 381.)

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)

Uniq—See *Spiro Mfg. Co.*

Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)

BOARDS, Running, for Fords

(Linoleum, Rubber and Aluminum covered wood boards)

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Slip-on."

Lawco—See *Lawson Co.*

Lawson Co., F. H., Dept. D, Cincinnati, O.
(See page 125.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Michigan Truck & Lumber Co., Holly, Mich.

R-E—See *Roose Mfg. Co.*

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
(See pages 125, 143, 307 and 953.)

Slip-on—See *Hudson Motor Specialties Co.*

Spiro Mfg. Co., C. 63-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See *Spiro Mfg. Co.*

BOATS, FLYING—See *Section I*

BOATS, MOTOR—See *Section I*

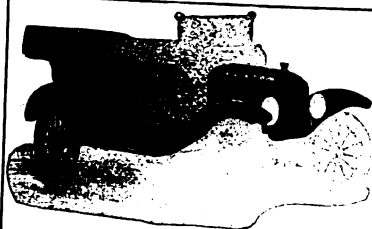
Everything is listed under the NOUN or principal word

R-E LINOLEUM RUNNING BOARD FOR FORD CARS



Interchangeable with regular Ford running boards. Made of selected wood, which positively will not warp. Covered with genuine cork linoleum and bound with heavy aluminum molding. Will outlast any car. No iron to rust or paint to wear off. Retain their bright new appearance indefinitely. Retail price, \$7.50 per pair. Write us today for prices and our catalog describing our complete line of Automotive Equipment.

THE ROOSE MANUFACTURING COMPANY
827-833 W. MAIN ST., LOUISVILLE, KY.



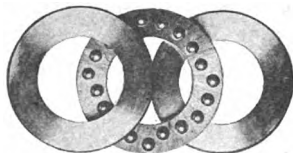
Fenders,
Running Boards,
Running Board Shields,
Hoods,
Radiators,
Radiator Shells,
Mufflers,
Replacement Parts,
For Ford Cars.

Also Fordson Tractor Fenders and Mufflers and Fenders for Ford Commercial Cars. Lawco Split Rim Tools will remove and replace all sizes and styles of transversely split rims.

Catalogs and Prices sent upon request

THE F. H. LAWSON COMPANY,
Dept. D, CINCINNATI, OHIO

ACORN BALL BEARINGS



We manufacture all Standard sizes of Flat and Grooved Type Thrust Ball Bearings and carry same in stock. Price List sent on request.

We also replace Flat or Grooved Type Thrust Bearings for all make of cars or trucks in any quantity to order on short notice.

Workmanship the best only and fully guaranteed.

THE ACORN BEARING CO.
New Britain, Conn.

Duplex Storage Batteries

For All Purposes

We manufacture a line of high grade storage batteries for ignition, lighting and power uses. Facilities for large production. *Write for descriptive literature and quotations.*

BEAVER DAM, **DUPLEX STORAGE BATTERY CO.**

WISCONSIN

Please mention The Automobile Trade Directory

BODIES, Automatic Dumping, for Fords

Anthony Co., Streator, Ill. "Rockers." (See page 127.)
 Jennings Automatic Dump Body, Roanoke, Va.
 Rocker—See Anthony Co.

BODIES, AUTOMOBILE—See Bodies, Metal Automobile; also Bodies, Wood Automobile**BODIES, AUTOMOBILE, FOR FORDS—See Bodies, Special Passenger****BODIES, COMMERCIAL—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping****BODIES, COMMERCIAL, FOR FORDS—See Bodies, Special Commercial; also Bodies, Automatic Dumping****BODIES, DUMPING—See Bodies, Special Dumping****BODIES, DUMPING, FOR FORDS—See Bodies, Automatic Dumping****BODIES, Metal Automobile**

(For Wood Automobile Bodies—See Bodies, Wood Automobile)

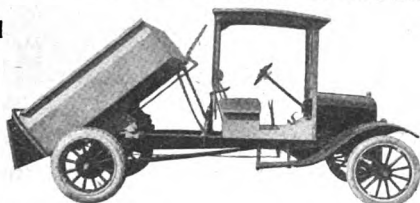
- Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
 Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
 Aircraft Engineering Corp., 517 E. 79th St., New York, N. Y.
 American Body Co., 1200 Niagara St., Buffalo, N. Y.
 Armstrong Co., M., 433 Chapel St., New Haven, Conn.
 Auto Body Co., Lansing, Mich. (See page 127.)
 Auto Metal Body Co., 346-52 Collins Ave., Pittsburgh, Pa.
 Auto Metal Body Co., 581 Worthington St., Springfield, Mass.
 Babcock Co., H. H., Watertown, N. Y. (See page 129.)
 Baker R. & L. Co., Cleveland, O. "Raulang."
 Beaudette Co., O. J., Pontiac, Mich.
 Biddle & Smart Co., Amesbury, Mass.
 Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
 Bowe Carriage Co., 711 Orange St., Wilmington, Del.
 Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
 Briggs Carriage Co., 11 Cedar St., Amesbury, Mass.
 Briggs Mfg. Co., Clay Ave., Detroit, Mich.
 Brooks-Ostruk Co., 235 W. 65th St., New York, N. Y.
 Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
 Brun & Co., 980 Elliott St., Buffalo, N. Y.
 Brunns Carriage Mfg. Co., 1140-48 Main St., Buffalo, N. Y.
 Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.
 Caffrey Co., Chas. S., Tenth & Market Sts., Camden, N. J.
 Central Mfg. Co., 18th St. & Columbia Ave., Connersville, Ind.
 Chauncey Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 127.)
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Collins Vehicle Woodwork Co., R. N., 3906 Chouteau Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Currier-Cameron Co., Amesbury, Mass.
 Cutter, J. Frank, 30 Amherst St., Cambridge, Mass.
 Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.
 Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
 Erdman-Guidler Co., 2290 Woodward Ave., Detroit, Mich. (See page 407.)
 Farnham-Nelson Co., 13-23 Arboretum Rd., Roslindale, Mass.
 Fisher Body Corp., Harper & Piquette Sts., Detroit, Mich.
 Fitts Gibbon & Crisp, Calhoun St. & P. & R. R., Trenton, N. J.
 Fleetwood Metal Body Co., Fleetwood, Pa.
 Griswold Motor & Body Co., 5838 Commonwealth Ave., Detroit, Mich.
 Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.
 Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
 Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
 Healey & Co., Broadway & 51st St., New York, N. Y.
 Holbrook Co., 166 West End Ave., New York, N. Y.
 Hollander & Morrill, Amesbury, Mass.
 Hudson Auto Body Corp., 507-09 W. 25th St., New York, N. Y.
 Judkins Co., J. B., Merrimac, Mass.
 Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.
 Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y.
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Lang Body Co., Cleveland, O.
 Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.
 Limousine-Carriage Mfg. Co., 3515 Michigan Ave., Chicago, Ill.
 Lind—See Ohio Body & Blower Co.
 Locke & Co., 427-53 E. 56th St., New York, N. Y.
 Longdin-Brugger Co., Second & Macy Sts., Fond du Lac, Wis.
 Lowry Top & Body Co., Gaul & Adams Sts., Philadelphia, Pa.
 Macinnis Bros., 120-22 23d St., Toledo, O.
 Martin Metal Mfg. Co., Wichita, Kans.
 Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.
 Milburn Wagon Co., 2134 Monroe St., Toledo, O.
 Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.
 Model Body Corp., 2261 Bellevue Ave., Detroit, Mich.
 Moline Body Corp., 2430 3rd Ave., Moline, Ill.
 Morton & Brett, 211-15 E. 23rd St., Indianapolis, Ind.
 Mullins Body Corp., 182 Franklin Ave., Salem, O.
 New Haven Carriage Co., New Haven, Conn. (See page 129.)

Everything is listed under the NOUN or principal word

ANTHONY AUTOMATIC ROCKER DUMP

No Power Required
Dumps Itself
Returns Itself
Simple, Foolproof
Easily Attached

Cable:
Anthonyco-Streator
W. U. Five Letter Code



For FORD TRUCK

Also
Steel Cabs
Special Equipment
Water Tight
Garbage Dumping
Bodies
Etc.

Pat'd and Patn. Pend

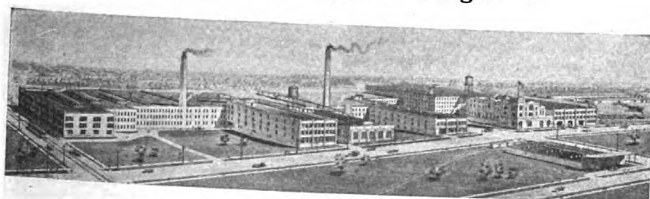
ANTHONY COMPANY, Inc.

Streator, Illinois

THE AUTO BODY CO.

ESTABLISHED 1901

W. V. C. Jackson, Gen. Mgr.



LANSING, MICHIGAN

500,000 square feet of manufacturing floor space

Automobile Bodies, Truck Bodies, Cabs

Quantity production inquiries solicited.

BODIES

We have specialized in the building of high grade
Taxicab bodies for well known makes of chassis.

Correspondence invited with dealers who are furnishing chassis for Taxicabs.

CHAUNCY BODY CORPORATION

2601 ARCHER AVENUE

CHICAGO, ILLINOIS

Please mention The Automobile Trade Directory

BODIES, Metal Automobile (Continued)

New Star Auto Metal Works, 1718-20 S. Wash Ave., Chicago, Ill.
 Ohio Body & Blower Co., 9205 Detroit Ave., Cleveland, O. "Lind."
 Pace Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Pontiac Body Co., Pontiac, Mich.
 Portland Body Works, Portland, Ind.
 Pullar Co., James, 5 Mechanic St., Hartford, Conn.
 Racine Mfg. Co., Sixth & Meade Sts., Racine, Wis.
 Raulang—See Baker R. & L. Co.
 Reiss Body Co., 3029 Baker St., Detroit, Mich.
 Robbins Body Corp., 1148 Division St., Indianapolis, Ind.
 Royal Motor Body Co., 211-15 W. 19th St., New York, N. Y.
 Rubay Co., 1818-38 W. 75th St., Cleveland, O.
 Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
 Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
 Seaman Co., W. S., 486 Virginia St., Milwaukee, Wis.
 Sidney Mfg. Co., Sidney, O.
 Smith-Springfield Body Corp., 324 Main St., Springfield, Mass.
 Springfield Coach Works, Springfield, Mass.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.
 Stewart Co., W. F., 1023 Harriet St., Flint, Mich.
 Stockbridge Body Co., 130 Union St., Springfield, Mass.
 Superior Body Co., 260 St. Georges Ave., Rahway, N. J.
 Thompson Co., E. J., Lexington Ave. & Thomas Blvd., Pittsburgh, Pa.
 Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
 Union City Body Co., Union City, Ind.
 Walker Carriage Co., Merrimac, Mass.
 Walker Body Co., Amesbury, Mass.
 Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.
 Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
 Wilson Body Co., C. R., 1660 Clay Ave., Detroit, Mich.
 York Body Corp., Linden & Belvidere Aves., York, Pa.

BODIES, Metal Commercial Car

(For Wood Commercial Bodies—See Bodies, Wood Commercial; for Dumping Bodies—See Bodies, Special Dumping)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
 Aome Wagon Co., Emigsville, Pa.
 Albert Bros., 11-18 Cannon St., New York, N. Y.
 American Body Co., 1200 Niagara St., Buffalo, N. Y.
 Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
 Auburn Wagon Co., 538 W. Race St., Martinsburg, W. Va.
 Auglaize Holst & Body Co., New Bremen, O.

Auto Body Co., Lansing, Mich. (See page 127.)
 Babcock Co., H. H., Watertown, N. Y. (See page 129.)
 Bee Automobile Co., 15-21 N. Church St., Allentown, Pa.
 Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
 Bowe Carriage Co., 711 Orange St., Wilmington, Del.
 Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
 Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.
 Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.
 Carll's Sons, Chas. W., Coles St., Trenton, N. J.
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Columbian Steel Tank Co., 1601-21 W. 13th St., Kansas City, Mo.
 Continental Trailer Corp., 3625 Superior St., Detroit, Mich.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Economy Holst & Body Co., 405 Lexington Ave., New York, N. Y. (Sole Distributors for Providence Body Co., Providence, R. I.) (See page 175.)
 Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
 Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
 Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 407.)
 Field Body Corp., Owosso, Mich. (See page 129.)
 Forayth Bros. Co., Harvey, Ill. (See page 1055.)
 Gilhool Body Works, Scranton, Pa.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
 Harrison Co., Robert, 224-28 W. First St. (S. Boston), Boston, Mass.
 Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.
 Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 139.)
 Hendrick Mfg. Co., 39-75 Dundaff St., Carbondale, Pa.
 Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
 Hopkins Mfg. Co. of N. Y., Hanover, Pa.
 Hummell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (See page 493.)
 Hydraulic Holst Mfg. Co., 292 Walnut St., St. Paul, Minn. "Superior."
 Interboro Holst & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
 Johnston Commercial Body Co., Fort Smith, Ark.
 K-L—See Kingsbury-Leahy Co.
 K. & J.—See Kilbourne & Jacobs Mfg. Co.
 Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."
 Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Lang Body Co., Cleveland, O.
 Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 989.)
 Longdin-Bruger Co., Second & Macy Sts., Fond-du-Lac, Wis.
 McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
 McFarlane & Co., H., 526-38 S. Canal St., Chicago, Ill.

Everything is listed under the NOUN or principal word

BABCOCK Quality Bodies

Closed Passenger
(Aluminum)

SEDANS

COUPES

LIMOUSINES

TAXICABS

Commercial
HEAVY DUTY TRUCKS
FINE PANEL DELIVERIES
AMBULANCES
HEARSE
BUSES

Catalog on request

H. H. BABCOCK COMPANY

Founded 1845

Watertown

New York

NEW HAVEN CARRIAGE CO.

New Haven Conn.



Designers and Builders
of High Grade
Automobile Bodies



PIRSCH Fire Truck Bodies

Built to Fit Any Chassis

Bodies of All Types

Chemical Tanks

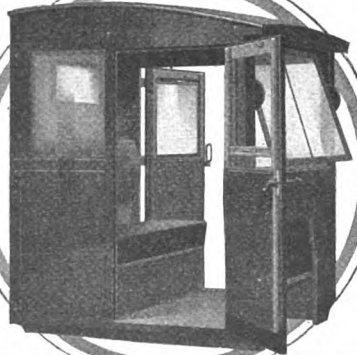
Pumping Units

Ladders—Equipments

Write for Bulletins B, C
and D-19

PETER PIRSCH & SONS CO.

KENOSHA, WIS.



Field Cab
FOUR SEASON

*New Case Style. All-metal
construction. All black enamel
finish. Matches any body.*

*The square construction is ex-
ceedingly handsome and sub-
stantial.*

The FIELD Four Season Cab is constructed entirely of flush panels bolted rigidly together. Steel roof is removable and interchangeable. Double ventilating and rain-water (ground steel) "blow-off" type door on driver's side is especially handy. Special new style rear window, adjustable latch lock. May be slung back down inside 14" Grosse FIELD double doors return and will protect the car.

FIELD Double doors adjust to fit any truck. Interchangeable units form any body on a single platform. The interior and under-pocket construction are unusually substantial. Write for Catalogue.

FIELD BODY CORPORATION OWosso, MICH., U.S.A.
World's Largest Builders of Truck Bodies Exclusively

Please mention The Automobile Trade Directory

BODIES, Metal Commercial Car (Continued)

Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
 Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
 Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
 Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
 Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
 Moline Plow Co. (Stephens Motor Works), Moline, Ill.
 New Haven Carriage Co., New Haven, Conn. (See page 129.)
 Niagara Motor Boat Co., 175 Sweeney St., North Tonawanda, N. Y.
 Niles Car & Mfg. Co., Erie St., Niles, O.
 Olesen Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.
 Peters Auto Body & Spring Works, 418-20 Ensor St., Baltimore, Md.
 Pirsch & Sons Co., Peter, Kenosha, Wis. (See page 129.)
 Providence Body Co.—See Economy Holst & Body Co.
 Press' Sons, Jacob, 501 W. 33d St., Chicago, Ill.
 Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
 Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
 Sidney Mfg. Co., Sidney, O.
 Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
 Stockbridge Body Co., 130 Union St., Springfield, Mass.
 Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
 Superior—See Hydraulic Holst Mfg. Co.
 Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
 Truck Engineering Co., 7031 Broadway, Cleveland, O.
 Universal Body Co., Chicago St., Jonesville, Mich.
 Waterbury Body Co., Thomaston, Conn.
 Whitman Agricultural Co., St. Louis, Mo.
 Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wright Co., Thomas, 71-78 Colden St., Jersey City, N. J.
 York Body Corp., Linden & Belvidere Aves., York, Pa.
 York Carriage Co., Franklin & Hay Sts., York, Pa.

BODIES, TRUCK—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping

BODIES, TRUCK, FOR FORDS—See Bodies, Special Commercial; also Bodies, Automatic Dumping

BODIES, Wood Automobile

(For Metal Automobile Bodies—See Bodies, Metal Automobile)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.

Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
 American Body Co., 1200 Niagara St., Buffalo, N. Y.
 Amesbury Body Co., Carriage Ave., Amesbury, Mass.
 Anchor Top & Body Co., 2000 South St., Cincinnati, O. (See page 1003.)
 Armstrong Co., M., 438 Chapel St., New Haven, Conn.
 Armstrong-Johnston Mfg. Co., W. First Ave. & Ferry St., Columbus, O.
 Auto Body Co., Lansing, Mich. (See page 127.)
 Auto Metal Body Co., 531 Worthington St., Springfield, Mass.
 Auto Truck Steel Body Co., 3023-46 Carroll Ave., Chicago, Ill.
 Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Neb. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)
 Badger Auto Body Co.—See Automotive Manufacturers' Associates.
 Baker R. & L. Co., Cleveland, O. "Raulang."
 Bela Body Co., Clark St., Amesbury, Mass.
 Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
 Blue Streak—See Izett Auto Body & Repair Shop.
 Bowe Carriage Co., 711 Orange St., Wilmington, Del.
 Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
 Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.
 Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
 Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
 Briscoe Motor Corp., Jackson, Mich.
 Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
 Brownell & Burt, 10 Washington St., Taunton, Mass.
 Brunn & Co., 980 Ellicott St., Buffalo, N. Y.
 Brunns' Carriage Mfg. Co., 1140-42 Main St., Buffalo, N. Y.
 Bub Body Corp., 691 Eighth Ave., Milwaukee, Wis.
 Central Auto Body Co., 16 Orchard St., Hartford, Conn.
 Chauncey Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 127.)
 Chicago Carriage & Trimming Co., 3514-20 S. Michigan Ave., Chicago, Ill.
 Chicago Coach & Carriage Co., 1233-31 S. Michigan Ave., Chicago, Ill.
 Cincinnati Auto Body Co., 1933-46 W. Eighth St., Cincinnati, O.
 Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Collins Vehicle Woodwork Co., R. N., 3900 Chouteau Ave., St. Louis, Mo.
 Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (Eastern Distributors for Anchor Bodies.) (See page 953.)
 Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
 Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Everything is listed under the NOUN or principal word



SKF
Research Laboratory
established at Phila-
delphia to co-operate
with the Gothenburg
Laboratories in the
study of the Ameri-
can Manufacturers'
friction problems.

THE technical advice brought you by our engineers embodies the experience of highly trained organizations in all parts of the world in the solving of friction problems.

This international experience is both technical and practical and is acquired in co-effort with the best international research endeavor.

SKF service in America is linked to this international experience. Its tangible evidence is found in products marked "**SKF**" and in the advice supplied you by our engineers.

SKF Industries, Inc.
165 Broadway, New York City

Supervising
at the request
of the stock-
holders.

The Hess-Bright Mfg. Co.
Skayef Ball Bearing Co.
Atlas Ball Co.
Hubbard Machine Co.
SKF Research Laboratories

SOUTHERN OIL & FEED MILLS, INC.
MILLS
PETERSBURG, VA. - SUFFOLK, VA.

Cable Address
S O F

PRINCIPAL OFFICE
PETERSBURG, VA.

Order Used (S.O.F. in connection
with this order of purchase
must be secured)

S K F Industries,
165 Broadway,
New York City.

April 23, 1920.

Gentlemen:

Attention Chief Engineer

We wish to thank you, and to say that we appreciate highly your sending here to assist us with the trouble we were having with ball bearings in our mill. Mr. has made us some very valuable suggestions, and we believe, his visit to us is going to prove most profitable. We wish also to thank you for your promptness in forwarding the two 6516 bearings, which came in very promptly.

It is indeed a pleasure to have business relations with a concern that chooses such a policy, as you have shown to us in this instance.

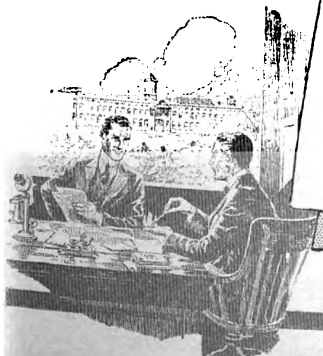
Again thanking you most cordially, we are

Yours very truly,

SOUTHERN OIL & FEED MILLS, INC.

BY: (Signed) J. C. Thompson

619



SKF

Among these products now offered are: Single row deep groove ball bearings, Thrust bearings, Steel balls, Double row self aligning ball bearings, Transmission equipment.

Please mention The Automobile Trade Directory

BODIES, Wood Automobile (Continued)

- Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.
- Erby & Sons Co., Wm. 121-27 W. Grand Ave., Chicago, Ill.
- Erdman-Gulder Co., 2290 Woodward Ave., Detroit, Mich. (See page 407.)
- Farnham-Nelson Co., 18-22 Arboretum Rd., Roslindale, Mass.
- Fehring Carriage Co., 601-09 Third St., Columbus, Ind.
- Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. E., Trenton, N. J.
- Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.
- Globe Body Co., Union & Sycamore Sts., Fostoria, O.
- Graff Mfg. Co., 2919 Indiana Ave., Chicago, Ill.
- Gregg-Wm. D. Rogers Co., 1926 Arch St., Philadelphia, Pa.
- H. & M. Body Corp., 603 Center St., Racine, Wis.
- Harvey Top & Body Co., 918-20 Main St., Buffalo, N. Y.
- Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
- Healey & Co., Broadway & 51st St., New York, N. Y.
- Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
- Holcker-Bilberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
- Hudson Auto Body Corp., 507-09 W. 35th St., New York, N. Y.
- Hughey & Son, Wm. J., 2518-20 Michigan Ave., Chicago, Ill.
- Immel Co., 1675 S. High St., Columbus, O.
- Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."
- Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.
- Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.
- Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y.
- Kratzer Carriage Co., 100 S. First St., Des Moines, Iowa.
- Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
- Lang Body Co., Cleveland, O.
- Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Cal.
- Lehman Mfg. Co., 310 Fourth St., Cammerton, Ind. (See page 143.)
- Ligonier Auto Body Co., 65-68 Water St., Ligonier, Ind.
- Limousine-Carriage Mfg. Co., 3515 Michigan Ave., Chicago, Ill.
- Limousine Top Co., 1900 Factory St., Kalamazoo, Mich.
- Locke & Co., 427-53 E. 56th St., New York, N. Y.
- Mac Innis Bros., 120-22 22d St., Toledo, O.
- McNear, George W., Cambria St., Boston, Mass.
- Mann-Aldrich Carriage Co., 1300 Lincoln St., Denver, Colo.
- Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
- Michigan Hearse & Motor Co., Grand Rapids, Mich.
- Miller & Co. A. J., Bellefontaine, O.
- Millsbaugh & Irish, S. La Salle St. & English Ave., Indianapolis, Ind.
- Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
- Moline Body Corp., 2430 3rd Ave., Moline, Ill.
- New Haven Carriage Co., New Haven, Conn. (See page 129.)
- Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
- Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
- Racine Mfg. Co., Sixth & Meade Sts., Racine, Wis.
- Raulang—See Baker R. & L. Co.
- Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa.
- Reiss Body Co., 3029 Baker St., Detroit, Mich.
- Roose Mfg. Co., 827-83 W. Main St., Louisville, Ky. (See pages 125, 143, 307 and 983.)
- St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
- Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
- Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
- Seaman Co., W. S., 486-90 Virginia St., Milwaukee, Wis.
- Sedan Body Co., Union City, Ind.
- Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.
- Sisman Co., Andrew C., 1221 Beaufault Ave., Detroit, Mich.
- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
- Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa.
- Stockbridge Body Co., 139 Union St., Springfield, Mass.
- Stone & Sons, C., 1658-74 Ogden Ave., Chicago, Ill.
- Streator Hearse & Body Co., 910 E. La Rue St., Streator, Ill.
- Superior Body Co., 360 St. George's Ave., Rahway, N. J.
- Terrill Bros., 130 Hamilton St., Rahway, N. J.
- Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 339.)
- Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
- Turnbull Motor Truck & Wagon Co., Defiance, O.
- Union City Body Co., Union City, Ind.
- Walker Carriage Co., Merrimac, Mass.
- Walker & Werner, 207-18 Fayette St., Peoria, Ill.
- Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
- Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

BODIES, Wood Commercial Car

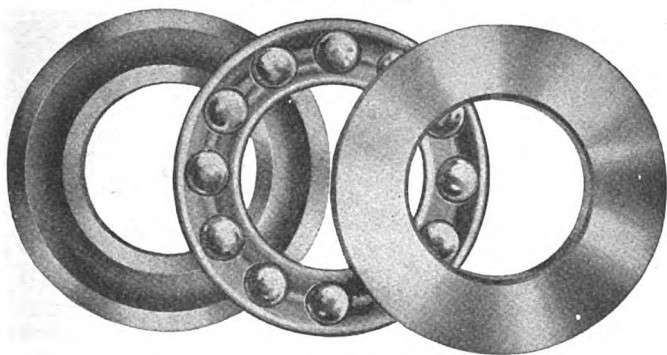
(For Metal Commercial Bodies—See Bodies, Metal Commercial; for Dumping Bodies—See Bodies, Special Dumping)

- Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
- Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
- Acme Wagon Co., Emigsville, Pa.
- Albert Bros., 11-13 Cannon St., New York, N. Y.
- Albright Co., S. S., 13th & U. Sts., Sacramento, Cal.
- American Body Co., 1200 Niagara St., Buffalo, N. Y.
- Anderson Motor Co., Rock Hill, S. C.
- Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
- Auto Body Co., Lansing, Mich. (See page 127.)

Everything is listed under the NOUN or principal word

THE BEARINGS COMPANY OF AMERICA

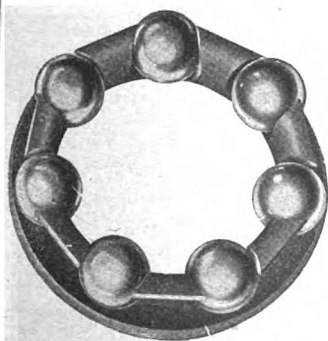
MANUFACTURERS OF



THRUST BALL BEARINGS made to your requirements and dimensions.

"STAR" BALL RETAINERS for Thrust, Magneto and Cup and Cone bearings.

DROP FORGINGS.



The Bearings Company of America
Lancaster, Penna.

Western Sales Office: 1012 Ford Bldg., Detroit, Mich.

Please mention The Automobile Trade Directory

BODIES, Wood Commercial Car (Continued)

- Auto Body Works, Pierce Ave. & Eighth St., Appleton, Wis.
- Auto Products Co., Station H, Cincinnati, O. (Dealers.) (See page 159.)
- Automobile Body Co., 5911 14th Ave., Detroit, Mich.
- Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)
- Babeock Co., H. H., Watertown, N. Y. (See page 129.)
- Badger Auto Body Co.—See Automotive Manufacturers' Associates.
- Badger Mfg. Co., Eighth & M Sts., (Have-lock) Lincoln, Nebr.
- Baker R. & L. Co., Cleveland, O. "Rau-lang."
- Bailey Mfg. Co., North Wales, Pa.
- Bailey & Bowne, Lafayette & Wiley Sts., Utica, N. Y.
- Baldwin & Son, D. W., 131 Post St., New Haven, Conn.
- Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Calif.
- Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
- Bennett-Sustich Co., 1716 W. Lafayette Ave., Detroit, Mich.
- Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
- Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
- Bowe Carriage Co., 711 Orange St., Wilmington, Del.
- Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.
- Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
- Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.
- Briscoe Motor Corp., Jackson, Mich.
- Brooklyn Commercial Body Co., 470-74 Clermont Ave., Brooklyn, N. Y.
- Brown Body Corp., Superior Ave. & E. 32d St., Cleveland, O.
- Brownell & Burt, 10 Washington St., Taunton, Mass.
- Calumet Truck Body Corp., Calumet, Mich.
- Cantrell & Co., J. T., Wall St., Huntington, N. Y.
- Central Auto Body Co., 15 Orchard St., Hartford, Conn.
- Champion Wagon Co., Owego, N. Y.
- Charlotte Wagon & Auto Co., Charlotte, N. C.
- Chicago Carriage & Trimming Co., 3514-20 S. Michigan Ave., Chicago, Ill.
- Clark Mfg. Co., J. L., 519 High St., Oakkosh, Wis.
- Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
- Collings Carriage Co., Front & Arch Sts., Camden, N. J.
- Columbia Wagon Co., Columbia, Pa.
- Columbus Body Co., Columbus, O.
- Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
- Cooling Carriage Co., 406 French St., Wilmington, Del.
- Cope Co., 1082-84 Clinton Ave., Irvington, N. J.
- Crane & Breed Mfg. Co., 1227 W. Eighth St., Cincinnati, O.
- Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
- Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
- Davenport Body Co., 1507 Rockingham Rd., Davenport, Ia.
- Diamond Body Co., Philadelphia, Pa.
- Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.
- Donigan & Nielson, 743-47 Third Ave., Brooklyn, N. Y.
- Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
- Economy Holist & Body Co., 405 Lexington Ave., New York, N. Y. (Sole Distributors for Providence Body Co., Providence, R. I.) (See page 175.)
- Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
- Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
- Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 407.)
- Eureka Co., First St., Rock Falls, Ill.
- Field Body Corp., Owosso, Mich. (See page 129.)
- Fitz Gibbon & Crisp, Calhoun St., & P. & R. R. R., Trenton, N. J.
- Fitz John-Erwin Mfg. Co., Muskegon, Mich.
- Ford Body Co., 301 N. Green St., Greensboro, N. Car.
- Frazier, B. F., 2614 Smallman St., Pittsburgh, Pa.
- Fulton-Walker Co., 20th & Filbert Sts., Philadelphia, Pa.
- Geissel & Sons, A., 485-87 N. Third St., Philadelphia, Pa.
- General Woodwork Co., 1225-35 Budd St., Cincinnati, O.
- Gibbons Body Co., 138 Worcester St., Boston, Mass.
- Gilhoof Body Works, Scranton, Pa.
- Golide, Louis, 1874 W. 22d St., Cleveland, O.
- Graves Co., L. C., Springboro, Pa.
- Great Western Removable Body Co., Fourth & Pierce Sts., Omaha, Neb.
- Grove City Body & Mfg. Co., 401 Erie Ave., Grove City, Pa.
- H. & M. Body Corp., 608 Center St., Racine, Wis.
- Haberer & Co., Boston St. and C. H. & D. Ry., Cincinnati, O.
- Hall Air Lock & Railway Supply Co., Oakville, Iowa.
- Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.
- Harrison Co., Robert, 324-38 W. First St. (S Boston), Boston, Mass.
- Henney Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
- Hesse Mfg. Co., Leavenworth, Kans. (See page 1003.)
- Hi-Grade—See Commercial Auto Body Co.
- Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
- Hoover Wagon Co., York, Pa.
- Hopkins Mfg. Co. of N. Y., Hanover, Pa.
- Interboro Holist & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
- Izett Auto Body & Repair Shop, 1432-30 Speer Blvd., Denver, Colo. "Perfection," "Nonxl."
- Jewett Co., Geo. H., 172-74 Shrewsbury St., Worcester, Mass.
- Joynt & Sons, R., 4231 Vermont Ave., Detroit, Mich.
- K-L—See Kingsbury-Leahy Co.
- Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
- Kipp Wagon Co., 222 E. 24th st., New York, N. Y.
- Knightstown Buggy Co., Knightstown, Ind.
- Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.
- Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.

Everything is listed under the NOUN or principal word

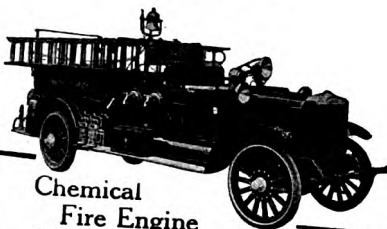
Acme Pattern Works

Detroit, Michigan

SPECIALISTS IN
**AUTOMOTIVE
PATTERN
EQUIPMENTS**

N. E. Cor. 4th and Porter Sts.
Tel. Main 4057

"THE BOYER"



Chemical
Fire Engine
(1½-Ton Truck)

HOSE BODY—

Capacity for 1000 ft., 2½ in.,
Double Jacket water hose.

TANKS—

Two chemical tanks of 35 gal. capacity. One tank recharging while others discharge.

We can build our equipment on any
make chassis

The Obenchain-Boyer Co.
Logansport, Ind.
U. S. A.

STANDARD MACHINERY COMPANY'S BEARINGS

The Right Bearings for Every Part and Every Purpose

We are Specialists on the whole subject of bearings. We understand every phase of this intricate problem. We know the functions and uses of ball bearings and of roller bearings and will give expert advice concerning the use of either. We make both kinds of bearings and they are the best that can be made. They will stand up and wear indefinitely under the severest test. Our journal and thrust bearings for automobiles, motor trucks and general machine service have been perfected through years of experience.

STANDARD MACHINERY COMPANY
AUBURN, R. I.

In quantity, price and promptness of delivery we leave nothing to be asked for.

Send blue prints and specifications and we'll solve all the problems.

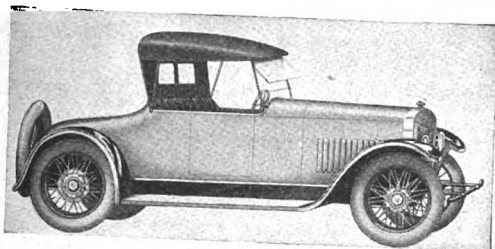


Please mention The Automobile Trade Directory

BODIES, Wood Commercial Car (Continued)

- Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
- Lang Body Co., Cleveland, O.
- Lange Wagon Co., H., S. St. Clair & Eva Sts., E. E., Pittsburgh, Pa.
- Lansing Body Co., 504 North Grand Ave., Lansing, Mich.
- Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.
- Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 989.)
- Leonhardt Wagon Mfg. Co., 412-20 E. Saratoga St., Baltimore, Md.
- Lobes Body Co., 17 N. West St., Mt. Vernon, N. Y.
- Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound Sts., St. Louis, Mo. (See page 41.)
- Lyons & Co., Hugh, Lansing, Mich.
- McCardell & Co., J. R., 395 S. Warren St., Trenton, N. J.
- McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
- McFarlane & Co., 526-38 S. Canal St., Chicago, Ill.
- McKay Carriage Co., Grove City, Pa.
- Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 901.)
- Marlin-Parry Corp., W. Market St. & Highland Ave., Indianapolis, Ind.
- Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.
- Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
- Meckel, Fred L., 9-13 E. 13th St., Chicago, Ill.
- Mertz Co., 704-08 Woodland Ave., Cleveland, O.
- Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
- Mifflinburg Body Co., Mifflinburg, Pa. (See page 141.)
- Milburn Wagon Co., 3134 Monroe St., Toledo, O.
- Miller Co., E. M., 118 S. Sixth St., Quincy, Ill.
- Miller & Co., A. J., Bellefontaine, O.
- Mills-Ellsworth Co., Keokuk, Ia.
- Miscampbell Body Co., H., 306 S. First Ave., E., Duluth, Minn. "Richeson's 3-in-1."
- Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
- Molzen Co., Peter, 522 W. 30th St., New York, N. Y.
- Mount Clemens Truck Body Co., Cass Ave. & G. T. R. R., Mt. Clemens, Mich.
- Mulholland Co., Dunkirk, N. Y.
- New Haven Carriage Co., New Haven, Conn. (See page 129.)
- New Ideal Wagon Works, 1845 Park Ave., New York, N. Y.
- Nicoulin Dray Mfg. Co., Algona, Ia.
- Niederhutt Carriage Co., 3556-60 Walnut St., Denver, Colo.
- Nonxl—See Izett Auto Body & Repair Shop.
- Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
- Obenchain-Boyer Co., Logansport, Ind. (See page 135.)
- Obergfell, W. M., 131-37 Ninth St., Jersey City, N. J.
- Olesen Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.
- Omaha Body Co., 1529 N. 16th St., Omaha, Neb. "Three-In-One."
- Parvis, Jr., & Co., Geo. W., 548-52 Rising Sun Ave., Philadelphia, Pa.
- Paterason Vehicle Co., 257-59 Market St., Paterson, N. J.
- Patriot Motors Co., Lincoln, Neb.
- Perfection—See Izett Auto Body & Repair Shop.
- Peters Auto Body & Spring Works, 418-20 Ensor St., Baltimore, Md.
- Pfeiffer Top & Body Corp., 2523-27 Leavenworth St., Omaha, Neb.
- Porter-Brown Auto Body Co., 1307 E. Seventh St., Los Angeles, Cal.
- Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.
- Providence Body Co.—See Economy Holst & Body Co.
- Randall—See Sunflower Body Works.
- Ranger—See Southern Motor Mfg. Association.
- Raulang—See Baker R. & L. Co.
- Rech-Murbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa.
- Ready Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
- Reiss Body Co., 3029 Baker St., Detroit, Mich.
- Richeson's 3-in-1—See Miscampbell Body Co.
- Ritcheson & Co., A. A., Dallas, Texas.
- Roeder Mfg. Co., Fred., 1396-1400 Atlantic Ave., Brooklyn, N. Y.
- Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
- Schildwachter Carriage Co., Park Ave. & 128th St., New York, N. Y.
- Schnabel & Sons, G. A., 2410 Penn Ave., Pittsburgh, Pa.
- Scholl & Son, Anton, 380-52 Flushing Ave., Brooklyn, N. Y.
- Schubert Wagon Co., August, 1-5 S. Warner St., Oneida, N. Y.
- Schukraft & Sons, Wm., 933-43 Fulton St., Chicago, Ill.
- Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
- Scott, Auto Body Co., 2334 Lawrence Ave., Denver, Colo.
- Sebastian Wagon Co., 425 E. 53d St., New York, N. Y.
- Shadbolt Mfg. Co., 63 Flushing Ave., Brooklyn, N. Y.
- Simplex Mfg. Co., Conneautville, Pa.
- Sleman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
- Smith Carriage Co., R. J., Lake & Lyell Aves., Rochester, N. Y.
- South Bend Spring Wagon & Carriage Co., 210-16 S. St. Joseph St., South Bend, Ind.
- Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
- Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.
- Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass.
- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
- Standard Auto Top & Body Co., 1333 Race St., Philadelphia, Pa.
- Standard Body Co., White Pigeon, Mich.
- Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
- Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.
- Stockbridge Body Co., 130 Union St., Springfield, Mass.
- Streator Hearse & Body Co., 910 E. La Rue St., Streator, Ill.
- Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.
- Sunflower Body Works, Topeka, Kans. "Randall."
- Tarco—See Tegetmeier & Riepe Co.

Everything is listed under the NOUN or principal word



Superior Runabout

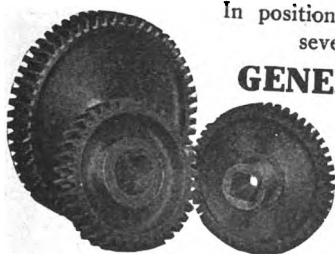
The Empire Bodies

Catalogued by the leading automobile jobbers

We co-operate with, and distribute through, leading Jobbers. Write for details of our plan.

We manufacture a complete line of Speedster, Sport and Touring Bodies to fit all model "T" Fords and Chevrolet 490.

EMPIRE AUTO SPECIALTY COMPANY
1420 Blue Island Ave.,
Chicago, Ill.



In position to take on medium sized contracts of several high class Automobile Builders

GENERATED BEVEL GEARS

For Rear Axles or Differentials

SPUR GEARS

For Transmissions

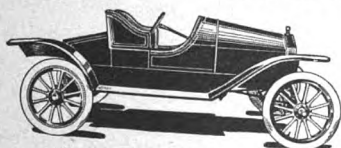
WM. GANSCHOW COMPANY

1001-5 Washington Blvd. CHICAGO, ILL.

SARATOGO SPEEDSTER and SPORT BODIES FOR FORD

MANUFACTURERS and DISTRIBUTORS

Classy Speedster Bodies
Sport Bodies, complete with
Windshields and Tops,
Crown Fenders
Racing Seats
Engine Hood and Radiator Shell
Perfex Radiators



DEALERS:—Write for our General Automotive Equipment Catalog

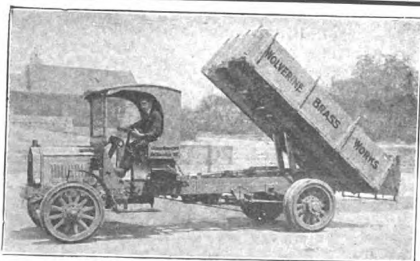
AUTO TIRE SALES CO. 1346-1348 MICHIGAN AVE., CHICAGO, U. S. A.

TRADE HORIZONTAL MARK DUMPING UNITS

For Every Truck
Simple, Durable, Efficient

Wood Hydraulic Hoist & Body Co.
4196 Bellevue Avenue, DETROIT, MICH.

Sales and Service Stations
DETROIT CHICAGO
2035 Gratiot Avenue 3755 Wentworth Ave.
New York, N. Y. 721 E. 135th St.
Pittsburgh, Pa. 2723 Liberty Ave.
Philadelphia, Pa. 3428 N. 18th St.
St. Louis, Mo. 1112 N. 9th St.



Boston, Mass. 1335 Hyde Park Ave.
Minneapolis, Minn. University at Sixth Ave., S. E.

Please mention The Automobile Trade Directory

BODIES, Wood, Commercial Car (Continued)

Tegetmeyer & Riepe Co., 771-73 First Ave., New York, N. Y. "Tarco."
 Texas Wagon Works, 4616 Harrisburg Blvd., Houston, Texas.
 Three-In-One—See Omaha Body Co.
 Timpte Bros., 2300 Walnut St., Denver, Colo.
 Trenton Body Co., 1-3 Center Ct., Trenton, N. J.
 Trippensee Mfg. Co., 12th St. & Stanley Ave., Detroit, Mich.
 Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
 Truck Engineering Co., 7681 Broadway, Cleveland, O.
 Truck Service Co., 116 F Ave., West, Cedar Rapids, Ia.
 Uhlenhaut Bros. Wagon Co., 1822-24 Merchant St., St. Louis, Mo.
 Union Wheel Works, 51-55 Stanton St., Newark, N. J.
 Unit Mfg. Co., 9 Cedar St., Amesbury, Mass.
 Universal Body Co., Chicago St., Jonesville, Mich.
 Van Auker Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.
 Walker Carriage Co., Merrimac, Mass.
 Waterbury Body Co., Thomaston, Conn.
 Waterloo Body Corp., Waterloo, N. Y.
 Watkins Commercial Body Corp., 666-72 Genesee St., Buffalo, N. Y.
 Wentworth & Irwin, 200 Second St., Portland, Ore.
 Whitman Agricultural Co., St. Louis, Mo.
 Williamson, Sam., 1800 Texas St., El Paso, Texas.
 Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
 Woodward Mfg. Co., Austin, Tex.
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wright Co., Thomas, 71-73 Colden St., Jersey City, N. J.
 York Carriage Co., Franklin & Hay Sts., York, Pa.
 York Body Corp., Linden & Belvidere Aves., York, Pa.

BODIES, Special Dumping

(For other Commercial Bodies—See Bodies, Metal Commercial; also Bodies, Wood Commercial)

American Truck Body Co., Martinsville, Va. "Fontaine."
 Anheuser-Busch Co., Ninth & Arsenal Sts., St. Louis, Mo.
 Areher Iron Works, 34th Pl. & Western Ave., Chicago, Ill. (See page 139.)
 Auglaize Holst & Body Co., New Bremen, O.
 Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill. "Dailey."
 Automatic Dump Car Co., 1300 Ernsperger St., South Bend, Ind.
 Barry's—See Truck Service Co.
 Berry Hydraulic Co., Erie, Pa.
 Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O.
 Carl's Sons, Chas., W. Coles St., Trenton, N. J.
 Charlotte Wagon & Auto Co., Charlotte, N. C.
 Columbia Wagon Co., Columbia, Pa. "Jennings."
 Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.

Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. "Hi-Grade." (See page 141.)
 Dailey—See Auto Truck Steel Body Co.
 Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
 Economy Holst & Body Co., 405 Lexington Ave., New York, N. Y. (Sole Distributors for Providence Body Co., Providence, R. I.) (See page 175.)
 Excelsior—See Rodenhausen's Excelsior Wagon Works.
 Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
 Fontaine—See American Truck Body Co.
 Gammon—See Pechstein Iron Works.
 Graves Co., L. C., Springboro, Pa.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
 Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. (See pages 139.)
 Hi-Grade—See Commercial Auto Body Co.
 Hummell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Representatives for Columbian Bodies.) (See page 493.)
 Interboro Holst & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
 Jennings—See Columbia Wagon Co.
 K. & J.—See Kilbourne & Jacobs Mfg. Co.
 Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."
 Lally Commercial Body Co., Paris St., Everett, Mass.
 Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 989.)
 Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound St., St. Louis, Mo. (See page 41.)
 Lynch Mfg. Co., Hammond, Ind.
 McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
 Mayer Wagon Co., 6461 Frankstown Ave., E. E., Pittsburgh, Pa.
 Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
 Michigan Bridge & Pipe Co., Lansing, Mich. "Yale."
 National Dump Body Co., Philadelphia, Pa.
 New Ideal Wagon Works, 1845 Park Ave., New York, N. Y.
 Patriot Motors Co., Lincoln, Neb.
 Pechstein Iron Works, Ninth & Johnson Sts., Keokuk, Iowa. "Gammon."
 Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.
 Providence Body Co.—See Economy Body Sales Co.
 Ranger—See Southern Motor Mfg. Association.
 Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
 Rodenhausen's Excelsior Wagon Works, 1485-37 Hutchinson St., Philadelphia, Pa. "Excelsior."
 Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
 Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
 Simplex Mfg. Co., Conneautville, Pa.
 Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
 Standard Steel Works, 1740 Tracy Ave., Kansas City, Mo. (See page 139.)
 Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa.

Everything is listed under the NOUN or principal word

ARCHER

END-DUMP HOISTS AND BODIES

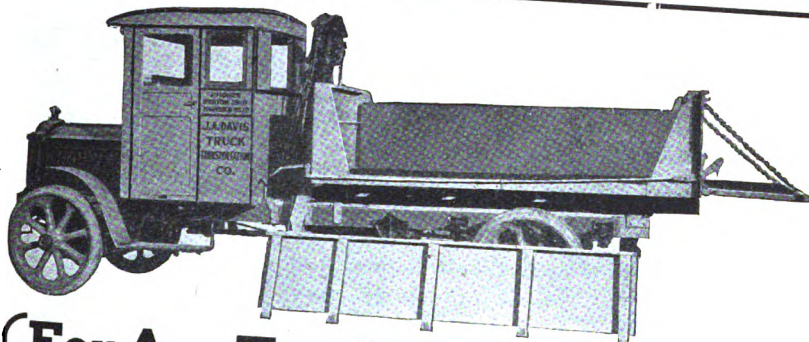
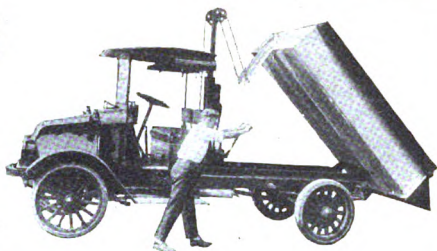
HAND OPERATED
1-2-3-4 and 5-TON SIZES.

Write for full data and prices

Manufactured and guaranteed by

ARCHER IRON WORKS

34th Place & Western Ave. Chicago, Ill.



For Any Truck - For Any Load

An all-purpose body. Made in five standard types for all power and hand dumping trucks. Steel throughout—removable sides—double acting tail gate. This 1921 Universal Model is one of a complete line of

STANDARD Steel Dump Bodies

BEST MATERIAL AND WORKMANSHIP

DURABLE AND ECONOMICAL

SPECIAL SIZES AND MODELS BUILT FROM SPECIFICATIONS

Write us today for complete catalog and dealers' terms

STANDARD STEEL WORKS 1740 Tracy Ave., Kansas City, Mo.



Combination Dump Bodies and Hydro Hoists

Build Bigger Truck Profits

Heil's 4 in 1 Bodies can be used for wide variety of purposes. They are furnished with 2 sets of removable sides and double acting tail gate. Upper sides—coal capacity; lower sides—gravel out freely. Sides removed—platform body. All bodies tapered 3" wider at rear to allow load to slide out freely. The Hydro Hoist is simple, compact and direct acting; utilizes all loading space; eliminates pipes, cables, pulleys and rollers, etc.

Builders of Compartment Truck Tanks for every make and model of truck.

The Motive Parts Corp., 128
W. 53rd St., New York City.
The McKenna Company, 1831
E. 38th St., Cleveland, O.
The Heil Co., 2718-20 West-
worth Ave., Chicago, Ill.

THE HEIL CO.
1136-40 Montana Ave., Milwaukee, Wis.

The Heil Northwestern Sales,
Pelham and St. Anthony
Aves., St. Paul, Minn.
The Modern Vehicle Co.,
437-451 Fourth St., San
Francisco, Calif.

Please mention The Automobile Trade Directory

BODIES, Special Dumping (Continued)

Stewart Iron Works Co., Cincinnati, O.
 TEC—See Truck Engineering Co.
 Transportation Equipment Co., 1637 Gratiot Ave., Detroit, Mich.
 Truck Engineering Co., 7031 Broadway, Cleveland, O. "TEC."
 Truck Service Co., 116 F Ave. W., Cedar Rapids, Ia. "Barry's."
 Wood Hydraulic Holst & Body Co., 4190 Bellevue Ave., Detroit, Mich.
 (See page 137.)
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wright Co., Thomas, 71-78 Colden St., Jersey City, N. J.
 Yule—See Michigan Bridge & Pipe Co.

BODIES, SPECIAL DUMPING, FOR FORDS

—See Bodies, Automatic Dumping

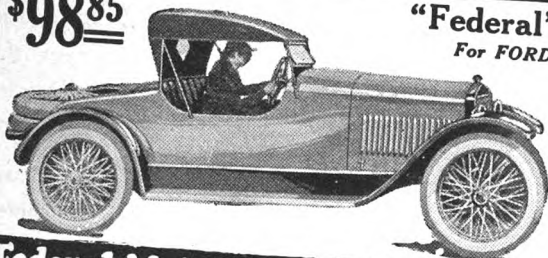
BODIES, Special Commercial, for Fords

(Including also commercial bodies to fit all truck attachments and convertible bodies of all types)

A.B.C.—See Clippinger & Sons Mfg. Co.
 Abingdon Wagon Co., Abingdon, Ill.
 Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "B.C."
 Auto Body Works, Pierce Ave. & Eighth St., Appleton, Wis.
 Automobile Body Co., 5911 14th Ave., Detroit, Mich.
 Automotive Manufacturers' Associates, 14th & Farnam Sts., Omaha, Nebr. (Sole Representatives for Badger Auto Body Co., Milwaukee, Wis.)
 B.C.—See Ames Co.
 Babcock Co., H. H., Watertown, N. Y. (See page 129.)
 Badger Auto Body Co.—See Automotive Manufacturers' Associates.
 Badger Mfg. Co., Eighth & M Sts., (Have-lock) Lincoln, Nebr.
 Bailey Auto Body & Sales Co., 21st & Olive Sts., St. Louis, Mo.
 Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Cal.
 Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
 Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
 Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga.
 Brooklyn Commercial Body Co., 470-74 Clermont Ave., Brooklyn, N. Y.
 Brownell & Burt, 10 Washington St., Taunton, Mass.
 Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.
 Calumet Truck Body Corp., Calumet, Mich.
 Cantrell & Co., J. T., Wall St., Huntington, N. Y.
 Champion Wagon Co., Owego, N. Y.
 Charlotte Wagon & Auto Co., Charlotte, N. C.
 Clark Mfg. Co., J. L., 519 High St., Oakkosh, Wis.
 Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.
 Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A.E.C."
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Columbia Body Co., 45 Selden Ave., Detroit, Mich.
 Columbia Wagon Co., Columbia, Pa.
 Columbian Steel Tank Co., 1601-21 W. 13th St., Kansas City, Mo.
 Columbus Body Co., Columbus, O.
 Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. "Hi-Grade." (See page 141.)
 Continental Car Co. of America, 4721 Park Blvd., Louisville, Ky.
 Defiance Carriage Co., Perry & Gorman Sts., Defiance, O.
 De Kalb Wagon Co., De Kalb, Ill.
 Detroit Weatherproof Body Co., Corunna, Mich.
 Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
 Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
 Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
 Eureka Co., First St., Rock Falls, Ill.
 Express Body Corp., 323 S. Michigan Ave., Chicago, Ill.
 Federal Motor Supply Co., 440 S. Dearborn St., Chicago, Ill. (Distributors.) (See page 141.)
 Field Body Corp., Owosso, Mich. (See page 129.)
 Fits Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
 Ford Body Co., 301 N. Green St., Greensboro, N. C.
 Geneva Wagon Co., Geneva, N. Y.
 Graves Co., L. C., Springboro, Pa.
 Grove City Body Mfg. Co., 401 Erie Ave., Grove City, Pa.
 Haberer & Co., Boston St. & C. H. & D. Ry., Cincinnati, O.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
 Harrison Co., Robert, 324-28 W. First St. (S. Boston), Boston, Mass.
 Henney Buggy Branch of Moline Plow Co., Moline, Ill.
 Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
 Hercules Buggy Co., Morton Ave., Evansville, Ind.
 Hi-Grade—See Commercial Auto Body Co.
 Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
 Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Utility."
 Hoover Wagon Co., York, Pa.
 Hopp Carriage Co., Fourth & Walnut Sts., Mifflinburg, Pa.
 Izett Auto Body & Repair Shop, 1422-60 Speer Blvd., Denver, Colo. "Perfection." "Nonxl."
 Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.
 Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.
 Lamco—See Lehman Mfg. Co.
 Lehman Mfg. Co., 310 Fourth St., Cannellton, Ind. "Lamco." (See page 143.)
 Lobes Body Co., 17 N. West St., Mt. Vernon, N. Y.
 Lowell Auto Body Co., Lowell, Mich.
 McKay Carriage Co., Grove City, Pa.
 Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
 Michigan Bridge & Pipe Co., Lansing, Mich. "Yule."
 Mifflinburg Body Co., Mifflinburg, Pa. (See page 141.)
 Mills-Ellsworth Co., Keokuk, Ia.
 Moline Plow Co. (Stephens Motor Works), Moline, Ill.
 Monday Co., A. J., 327 Fourth St., Milwaukee, Wis.

Everything is listed under the NOUN or principal word

\$98⁸⁵



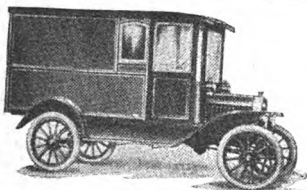
"Federal" Victory Model
For FORDS and CHEVROLET

Here is something entirely new in body equipment. Rear cut out for two tires' carrying space, built on the principle of high priced cars.

Dealers write for "FEDERAL-1ST" of high grade speed bodies and automotive equipment.

Territory Open for Live Dealers

Federal Motor Supply Co. Inc. 440 So. Dearborn St. Chicago, Ill.



"COMMERCIAL" BODIES
For FORDS

Volume Manufacturing Assures Low Prices—Quickest Delivery

Write for Catalogue

TEN
STYLES
FOR
FORD
TON
TRUCK

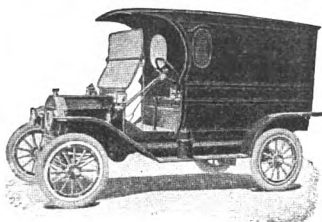


TEN
STYLES
FOR
FORD
"T"
CHASSIS

St. Louis, U.S.A.

THE COMMERCIAL AUTO BODY CO.
5401 N. Bulwer Ave., St. Louis, Mo.

Commercial Bodies for
Ford and other Chasses



Write for particulars and prices

Designers and Builders of
High Grade Commercial
Automobile Bodies of Every
Description.

The Mifflinburg Body Co.
Mifflinburg, Pa.

COMPLETELY ASSEMBLED
RUNNING BOARDS

FLOOR AND TOE BOARDS

IN EXACT ACCORDANCE WITH SPECIFICATIONS

Quality, Workmanship and On-Time Deliveries Guaranteed

Send Us Your Blue Prints for Estimate

HIGH GRADE **WOOD PRODUCTS** OF ALL KINDS

Builders' Mfg. Co., 828-830 N. Wells St., Chicago, Ill.

Please mention The Automobile Trade Directory

BODIES, Special Commercial, for Fords (Continued)

Murphy Co., P. J., 19-21 Main St., N. E., Minneapolis, Minn.

Nepessing Mfg. Corp., Lapeer, Mich.

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)

Nonxi—See Isett Auto Body & Repair Shop.

Pfeiffer Top & Body Corp., 2523-27 Leavenworth St., Omaha, Neb.

Perfection—See Isett Auto Body & Repair Shop.

Press' Sons, Jacob, 501 W. 33d St., Chicago, Ill.

Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.

Ranger—See Southern Motor Mfg. Association.

Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.

Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."

Standard Commercial Body Corp., 423-21 E. 104th St., New York, N. Y.

Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.

Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass.

Standard Body Co., 934 Lowe St., Appleton, Wis.

Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa. "Woodbury."

Stevens Implement Co., Sidney, Ogden, Utah.

Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.

Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.

Texas Wagon Works, 4516 Harrisburg Blvd., Houston, Tex.

Truck Engineering Co., 7081 Broadway, Cleveland, O.

Utility—See Hill Pump Valve Co.

Waterloo Body Corp., Waterloo, N. Y.

Watkins Commercial Body Corp., 666-72 Genesee St., Buffalo, N. Y.

Wayne Works, 16th & North F Sts., Richmond, Ind.

Whetstone & Co., John H., Court St., Lapeer, Mich.

Whitfield & Son, W. H., Penn Yan, N. Y.

Williams Wagon Works, Third St., Macon, Ga.

Woodbury—See Steffen-Van Steenwyk Co.

Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

York Body Corp., Linden & Belvidere Aves., York, Pa.

York Carriage Co., Franklin & Hay Sts., York, Pa.

Yule—See Michigan Bridge & Pipe Co.

BODIES, Special Passenger, for Fords

(Including runabout, touring car, special speedster or racing bodies and closed bodies)

A-S-P—See Allied Steel Products Co.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."

Amesbilt—See Ames Co.

Aristocrat—See Dunham Co.

Auto Remodelling Co., 1503 S. Michigan Ave., Chicago, Ill. "Remo."

Autowa—See Ottawa Body Co.

Blue Streak—See Isett Auto Body & Repair Shop.

Breeden & Cole, 1245 Market St., San Francisco, Cal.

Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.

Bub Body Corp., 691 Eighth Ave., Milwaukee, Wis.

Camping Car Co., 2100 Locust St., St. Louis, Mo. "Lamsted Kampkar."

Champion Racing Body Co., 1920 S. Wabash Ave., Chicago, Ill.

Charlotte Wagon & Auto Co., Charlotte, N. C.

Chauney Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 127.)

Columbia Body Co., 45 Selden Ave., Detroit, Mich.

Craig-Hunt—See Speedway Engineering Co.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dayton Metal Body Co., Pennsylvania Ave. & Kiser St., Dayton, O.

Dunham Co., Thos., Aurora, Ill. "Patrician," "Symphony," "Aristocrat," "Tuxedo." (See page 163.)

Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.

Empire Auto Specialty Co., 1426 Blue Island Ave., Chicago, Ill. (See page 137.)

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Federal Motor Supply Co., 440 S. Dearborn St., Chicago, Ill. (Distributors.) (See page 141.)

Fidelity—See New England Mills Co.

Fitz Gibbon & Crisp, Calhoun St. & P. & R. R., Trenton, N. J.

Isett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."

Kelley Wheel Co., Detroit, Mich. (See page 1061.)

Lamco—See Lehman Mfg. Co.

Lamsted Kampkar—See Camping Car Co.

Lehman Mfg. Co., 310 Fourth St., Cammerton, Ind. "Lamco." (See page 143.)

Mac Innes Bros., 120-22 22nd St., Toledo, O.

Morton & Brett, 311-15 E. 23d St., Indianapolis, Ind.

National Body Mfg. Co., 810 17th Ave., N., Nashville, Tenn.

New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. "Fidelity." (See page 143.)

New Star Auto Metal Works, 1718-20 S. Wabash Ave., Chicago, Ill.

Ottawa Body Co., Ottawa, Ill. "Autowa."

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Patrician—See Dunham Co.

Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.

Remo—See Auto Remodelling Co.

Roose Mfg. Co., 827-35 W. Main St., Louisville, Ky. "Speed-King." (See pages 125, 143, 307 and 983.)

Royal Auto Body Co., 8727-37 Cottage Grove Ave., Chicago, Ill. "Thorobred." (See page 143.)

Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.

Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.

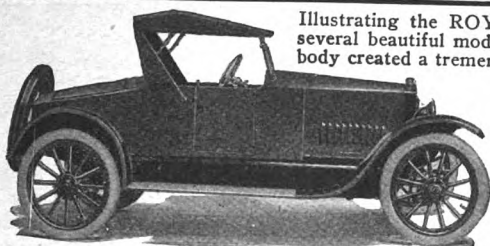
Speed-King—See Roose Mfg. Co.

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 409.)

Symphony—See Dunham Co.

Tailor-Made Body Co., 1467 S. Michigan Ave., Chicago, Ill.

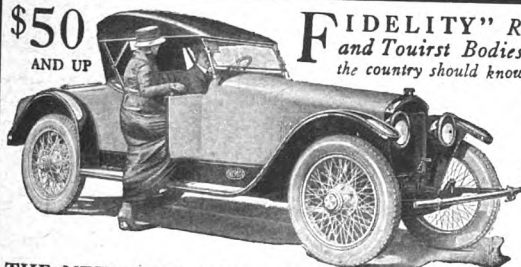
Everything is listed under the NOUN or principal word



Illustrating the ROYAL THORBRED, one of several beautiful models. This unusually beautiful body created a tremendous success. It is in a class all by itself with individuality as its dominant tone. With this beautiful body on a Ford chassis the desire for higher priced cars is wholly removed. Jobbers: Here is a money maker. Dealers: Get in touch with your jobber. If he cannot supply you write direct.

ROYAL AUTO BODY CO., 3727 Cottage Grove Chicago, Ave., Ill.

\$50
AND UP



FIDELITY" Roadster, Speedster, Torpedo and Tourist Bodies for Fords. Every dealer in the country should know about these bodies—just the thing to make an old Ford chassis sell.

DEALERS WRITE FOR PRICES

"The Little Salesman"

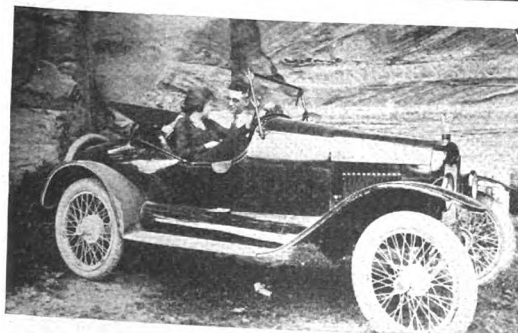
our Dealers' Confidential Illustrated Price List, quotes prices on Fidelity Bodies; also Lowest Prices on all Standard

Automobile Supplies

END TODAY FOR A COPY OF

"The LITTLE SALESMAN"

THE NEW ENGLAND MILLS CO., 1027 W. Van Buren St., CHICAGO



DON'T ENVY THE MAN WHO DRIVES A LAMCO' Equipped FORD ... DRIVE ONE YOURSELF...

Immediate Deliveries

Direct From the Manufacturer

The car for "Lamcoline"

Fals — THE "Lamcoline"

of Ford Special Bodies is Exclusive

Sporting-Touring-Racing

DEALERS—Write for the late edition

of the "LAMCO" showing the complete

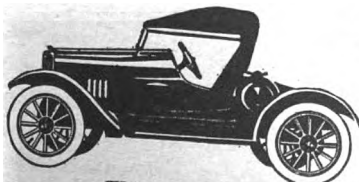
"Lamcoline" of Bodies, Tops,

Seat and Radiator Covers, Spark Plugs,

Tires and Accessories.

Lehman Mfg. Co. 310 Fourth St. Canton, Ind.

SPEED-KING SPEEDSTER BODY FOR FORDS



We can furnish this body with or without top and windshield, primed or fully finished in Black, Auto Blue, Brewster Green, Stutz Red or Battleship Gray.

\$42.50 and Up

Dealers and Jobbers—"The Speed-King" never fails to attract attention in any kind of company. Everybody sold brings other orders. Fits any model T Ford and permits use of old radiator, fenders, running Boards, Splash Guards, etc.

Write for dealers' proposition.

THE ROOSE MANUFACTURING COMPANY

827-833 W. MAIN ST., LOUISVILLE, KY.

Please mention The Automobile Trade Directory

BODIES, Special Passenger, for Fords (Continued)

Thorobred—See Royal Auto Body Co.
Tuxedo—See Dunham Co.
Universal Auto Products Co., 3727 Cottage
Grove Ave., Chicago, Ill.
Wabash Auto Radiator Mfg. Co., 1117-23 S.
Wabash Ave., Chicago, Ill.
Williams Wagon Works, Third St., Macon, Ga.

BODY ANTI-SQUEAK—See Lining, Body
or Frame

BODY BUILDERS' CLAMPS—See Clamps,
Woodworkers

BODY GLASS—See Glass, Polished Plate

BODY HANDLING TRUCKS—See Trucks,
Body Handling

BODY HOISTS—See Hoists, Truck Body

BODY IRONS—See Irons, Body

BODY LINING—See Lining, Body or Frame

BODY PADDING—See Lining, Body or
Frame

BODY PARTS—See Parts, Wood Automomobile Body

BODY POLISH—See Polishes, Automobile Body

BODY RUBBING MACHINES—See Machines, Body Rubbing

BODY STOCK—See Lumber, Automobile;
also Aluminum, Sheet; also Steel, Sheet

BOILER ALARMS—See Columns, Water

BOILER COLUMNS—See Columns, Water

BOILER FEED PUMPS—See Pumps, Boiler Feed

BOILER FEED REGULATORS—See Regulators, Water Level

BOILER INJECTORS—See Injectors, Boiler Feeding

BOILER TUBE EXPANDERS—See Expanders, Boiler Tube

BOILER WATER GAGES—See Gages, Boiler

BOILERS, Automobile Steam

Stanley Motor Carriage Co., Newton, Mass.

BOILERS, Steam Engine Cleaning

(For cleaning engine, transmission or axle parts by steam)

Eureka—See Lattner Mfg. Co.
Lattner Mfg. Co., P. M., 515 F Ave. W.,
Cedar Rapids, Iowa. "Eureka."

BOLT AND SCREW CASES—See Cases, Bolt

BOLT CLIPPERS—See Clippers, Bolt and Rivet

BOLT EXTRACTORS—See Extractors, Stud Bolt

BOLT LUBRICATORS—See Lubricators, Spring and Shackle Bolt

BOLT WRENCHES—See Wrenches, Nut and Bolt

BOLTS, Airplane Eye

Automatic Products Co., 1145 W. Grand
Blvd., Detroit, Mich. (See page 825.)
Barcalo Mfg. Co., 235 Louisiana St., Buffalo,
N. Y.
Metal Parts Mfg. Co., 1034 E. 152d St., Cleveland, O.

BOLTS, Aircraft Propeller Hub

Steel Products Co., Cleveland, O.
(See page 145.)

BOLTS, CAP—See Screws, Cap and Set

BOLTS, CARRIAGE—See Bolts, Machine and Carriage

BOLTS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

BOLTS, ENGINE for Fords—See Bolts, Special for Fords

BOLTS, EYE—See Bolts, Airplane Eye

BOLTS, Machine and Carriage

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

Atlas Bolt & Screw Co., Cleveland, O.
(See page 831.)

Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.

Clark Bros. Bolt Co., Milldale, Conn.

Columbus Bolt Works Co., Columbus, O.
(See page 147.)

Eagle—See Skelly Bolt Co.

Falls Rivet Co., Kent, O.

Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Graham Nut Co., 1317-19 W. Carson St., Pittsburgh, Pa.

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Haydon, A. & M., 304 N. 22d St., Philadelphia, Pa.

Kirk-Latty Mfg. Co., 1971 W. 35th St., Cleveland, O.

Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.

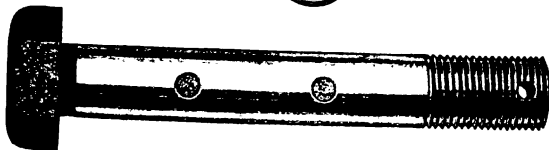
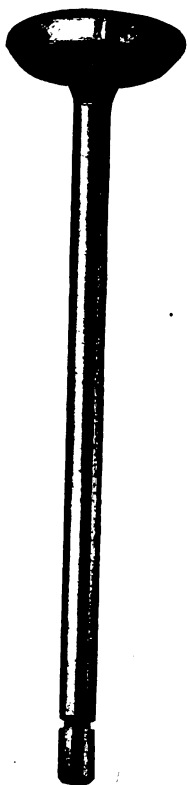
Lans & Sons, Mathew, 2907 Carson St., Pittsburgh, Pa.

The Steel Products Company

Engineering and Manufacturing Service

Means to You

- 1st Investigation of conditions under which parts must give service.
- 2nd Determination as to materials, design, machining and treatments of such character as will render best service under existing conditions.
- 3rd The Production of parts of just the proper material and by proper methods to meet the conditions as they exist, at prices consistent.
- 4th Parts on which the integrity of your product may be safely based.



The Steel Products Co.

MAIN PLANT
Cleveland

VALVES
TAPPETS
SPRING, KING AND
TIE ROD BOLTS

MICHIGAN PLANT
Detroit

DRAG LINKS
ROD ASSEMBLIES
STARTING CRANKS
ETC.

BOLT and SCREW PLANT
Cleveland

CHASSIS BOLTS
SPECIAL BOLTS
CAP SCREWS
ETC.

Please mention The Automobile Trade Directory

BOLTS, Machine and Carriage (Continued)

Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Pawtucket Mfg. Co., 337 Pine St., Pawtucket, R. I.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Pittsburgh Screw & Bolt Co., Preble Ave (N. E.), Pittsburgh, Pa.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Rhode Island Tool Co., Providence, R. I.
 Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Skelly Bolt Co., Thomas P. 24th & Callowhill Sts., Philadelphia, Pa. "Eagle."
 Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, PROPELLER HUB—See Bolts, Aircraft Propeller Hub

BOLTS, SHACKLE—See Bolts, Spring Shackle

BOLTS, Special Demountable Rim

Bayne Mfg. Co., Bushnell, Ill.
 (See page 669.)
 Hi-Ko Rim Lock Co., 4723 Dilman Blvd., St. Louis, Mo.
 Jiffy Rim Lock Co., Scarrit Arcade Bldg., Kansas City, Mo.

BOLTS, Special, for Fords

Acme Mfg. Co., Boonton, N. J.
 Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
 Benford Auto Products, Inc., Mt. Vernon, N. Y. (See page 945.)
 Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.
 Cincinnati Screw Co., Twilight, O. (See page 945.)
 Dunham Co., Thos., Aurora, Ill. (See page 163.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.

BOLTS, Spring Shackle

(Complete Bolt with Oil or Grease Cup attached)

Bard Mfg. Co., Royersford, Pa. (See page 708.)
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)
 Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
 Brewer Tichenor Corp., Cortland, N. Y. (See page 573.)
 Brown Co., 1071-78 Clinton St., Syracuse, N. Y.
 Clark Bros. Bolt Co., Milldale, Conn.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Empress—See Bowen Products Corp.
 Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O. (See page 825.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Fosteria Screw Corp., E. Railroad St., Fostoria, O.

Hyklas—See Parts Service Co.
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 147.)

Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 147.)

Steel Products Co., Cleveland, O. (See page 145.)

U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)

Upson Nut Co., Unionville, Conn.

BOLTS, STEP—See Bolts, Machine and Carriage

BOLTS, Stove and Tire

American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O. (See page 831.)
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 427.)
 Clark Bros. Bolt Co., Milldale, Conn.
 Columbus Bolt Works Co., Columbus, O. (See page 147.)
 Corbin Screw Corp., High St., New Britain, Conn.
 Falls River Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3555 E. 72d St., Cleveland, O. "Perfection."
 Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
 Kirk-Latty Mfg. Co., 1971 W. 35th St., Cleveland, O.
 Lamson & Sessions Co., 2138 Scranton Rd., Cleveland, O.
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Read & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
 Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, TIRE—See Bolts, Stove and Tire

BOLTS and NUTS, Special Aircraft

Erie Specialty Co., Erie, Pa.

BONNETS, ENGINE—See Hoods, Engine

BONNETS, MOTOR—See Hoods, Engine

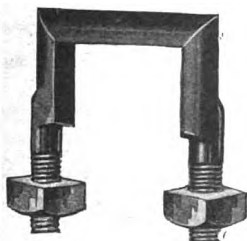
BONNETS, UNDER—See Pans, Dust

BOOKS, Accounting and Cost Systems

Accurate System & Manifold Co., 403 Broome St., New York, N. Y.
 Comfort Printing Specialty Co., 107 N. Eighth St., St. Louis, Mo.

Everything is listed under the NOUN or principal word

Automobile Spring Clips

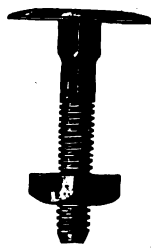


MANUFACTURERS OF AUTOMOBILE HARDWARE

We make a specialty of
SPRING CLIPS, STEP BOLTS, BLANK
TEE BOLTS, YOKE AND ROD ENDS,
BODY OR TOP IRONS, FENDER
RIVETS, BOLTS, NUTS AND
WASHERS.

Special Automobile forgings made to
blueprint or carried in stock.

THE COLUMBUS BOLT WORKS CO.
COLUMBUS, OHIO



Step Bolt

Phoenix Products

Screw Machine Parts

From $\frac{3}{4}$ Inch Up to
 $2\frac{1}{2}$ Inch Diameter

*Grinding Work
Spring Shackle Bolts
Valve Tappets*

*We Positively Guarantee Service
and Quality*

Phoenix Manufacturing Co.
Detroit, Mich.

FACTORY AND OFFICES:
Loraine and Grand River Aves.

FOR ALL POPULAR CARS
EXCEPT FORD

Hyklas

Valves
Steering Knuckle Bolts
Spring Shackle Bolts
Tie Rod Bolts

Anticipate your requirements for over-
haul business and send us your orders.

OUR POLICY

Quality Parts Prompt Shipments
Lower Prices Intelligent Service

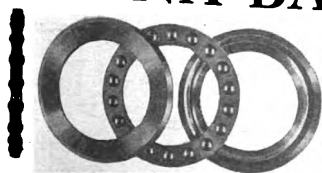
Use our stock-room as your regular
source of supply.

Our Offer

"If not right, return 'em"—protects you.

THE PARTS SERVICE COMPANY
9307-9311 Hough Ave. Cleveland, Ohio

AETNA BALL BEARINGS



The manufacturing facilities of the
Aetna plant are thoroughly modern.
Only the very latest machinery has
been installed, together with all the
latest appliances necessary for the man-
ufacture of a PERFECT BEARING.

CHICAGO

AETNA BALL BEARING MFG. CO.
213-231 Institute Place

ILLINOIS

Please mention The Automobile Trade Directory

BOOKS, Accounting and Cost Systems (Continued)

- Gregory, Mayer & Thom Co., 19-21 Cadillac Sq., Detroit, Mich. (See page 365.)
 Harton & Co., Thos. J., 212 Church St., New York, N. Y.
 Holmes & Co., E. J., 110 S. Dearborn St., Chicago, Ill. (See page 377.)
 Motor Car Service Bureau, Danville, Ky. (See page 385.)
 Tallman, Robbins & Co., 316 W. Superior St., Chicago, Ill.

BOOKS and PERIODICALS

(Covering only Books and Periodicals advertised in this publication)

- Automobile Blue Book Publishing Co., The, 243 W. 39th St., New York, N. Y. (See pages 149 to 152.)
 Automotive Publishing Co., 443 S. Dearborn St., Chicago, Ill. (See page 153.)
 Chicago Tribune, Chicago, Ill. (See page 153.)
 City Editor Publishing Co., 13-21 Park Row, New York, N. Y. (See page 165.)
 Collifers, 416 W. 13th St., New York, N. Y. (See page 163.)
 Leslie's Weekly, New York, N. Y. (See page 357.)
 Michigan State Auto School, 3729 Woodward Ave., Detroit, Mich. (See page 153.)
 Service Engineering Co., 615 Commercial St., San Francisco, Cal. (See page 349.)

BOOSTERS, BATTERY—See Rectifiers, Alternating Current

BOOTS, JOINT — See Boots, Steering Knuckle

BOOTS, Motorists' Over

(For or felt boots to wear over regular shoe when motoring in cold weather)

- Putnam & Co., A. H., 154 Maple St., Danvers, Mass.

BOOTS, Steering Knuckle and Joint

(Leather, Otelloth and Fabric Covers for enclosing Steering Connections and Universal Joints)

- Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 535.)
 Atlas Specialty Mfg. Co., 16-23 E. 24th St., Chicago, Ill. (See page 307.)
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.
 Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bailey-Fitwell Co., 1316 S. Grand Ave., Los Angeles, Cal.
 Bemco—See B. E. Mfg. Co.
 Campbell—See Perkins-Campbell Co.
 Carter Co., George R., Connerville, Ind.
 Chicago Rawhide Mfg. Co., 1801 Elston Ave., Chicago, Ill.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

- Detroit Leather Works, 803 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Economy Stay Co., Jefferson City, Mo.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.

- Hager & Son, Chas., 1926 Broadway, New York, N. Y.
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 119.)
 Hunt Co., Henry C., 201 Franklin St., Boston, Mass. (See page 115.)
 Indianapolis Saddlery Co., 237 S. Meridian St., Indianapolis, Ind.
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.
 Sutherland Co., F. L., 139 Beaumont St., Detroit, Mich. (See page 609.)

BOOTS, Steering Knuckle, for Fords

(Leather, Otelloth and Fabric Covers for enclosing Steering Connections)

- Atlas Specialty Mfg. Co., 16-23 E. 24th St., Chicago, Ill. (See page 307.)
 Campbell—See Perkins-Campbell Co.
 Detroit Leather Works, 803 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

BOOTS, TIRE REPAIR—See Sleeves, Tire Repair

BOOTS, TOP—See Covers, Top

BOOTS, UNIVERSAL JOINT—See Boots, Steering Knuckle

BORERS, AIRCRAFT PROPELLER HUB—See Machines, Aircraft Propeller Hub Boring

BORING BARS—See Bars, Boring; also Tools, Portable Cylinder Reboring

BORING HEADS—See Heads, Boring

BORING MACHINES—See Machines, Borings; also Machines, Cylinder Reboring; also Machines, Aircraft Propeller Hub Boring; also Machines, Wood Boring

BORING MILL CHUCKS—See Chucks, Boring Mill

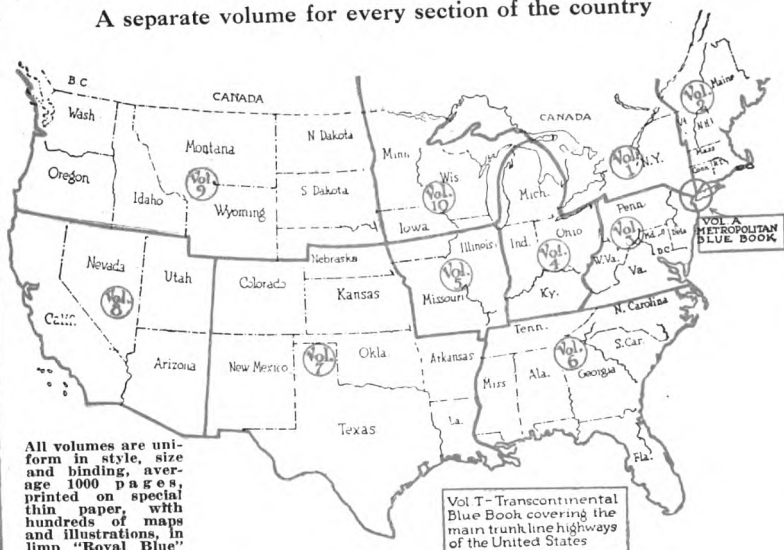
BOTTLES, Vacuum

- Bailey-Fitwell Co., 1316 S. Grand Ave., Los Angeles, Cal.
 Ferrostat—See Stanley Insulating Co.
 Ice-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.
 Stanley Insulating Co., 43 Exchange Pl., New York, N. Y. "Ferrostat."

Everything is listed under the NOUN or principal word

The New 1921 Automobile Blue Books

A separate volume for every section of the country



All volumes are uniform in style, size and binding, average 1000 pages, printed on special thin paper, with hundreds of maps and illustrations, in limp "Royal Blue" binding, stamped in gold.

Ready, April, 1921.

Vol. 1—New York State, including Long Island, Ontario and adjacent Quebec, with extension routes into adjacent New England, Pennsylvania, New Jersey and Ohio. **\$4.00 net**

Ready May, 1921.

Vol. 2—Connecticut, Massachusetts, New Hampshire, Rhode Island, Vermont, Maine, Quebec, New Brunswick, Nova Scotia and New York State east of Hudson River. **\$4.00 net**

Ready March, 1921.

Vol. 3—Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia and District of Columbia, with extension routes into North Carolina, Tennessee, Southern New York State and Eastern Ohio. **\$4.00 net**

Ready May, 1921.

Vol. 4—Ohio, Indiana, Kentucky and Lower Peninsula of Michigan, with extension routes to Chicago, Clinton, St. Louis, Nashville, Buffalo and Pittsburgh. **\$4.00 net**

Ready May, 1921.

Vol. 5—Iowa, Illinois, Missouri, Southern Wisconsin, Western Kentucky and Western Indiana, with extension routes to St. Paul, Minneapolis, Memphis, Little Rock and Topeka. **\$4.00 net**

Ready October, 1920.

Vol. 6—Florida, Georgia, Alabama, North Carolina, South Carolina, Mississippi, Tennessee and Eastern Louisiana, with extension routes to Washington, Louisville, Cincinnati and Lexington. **\$4.00 net**

Ready January, 1921.

Vol. 7—Colorado, Nebraska, Kansas, Texas, Oklahoma, Louisiana, Arkansas, New Mexico, Southern Wyoming and Eastern Utah, with extension routes to Phoenix, Grand Canyon, St. Louis, Salt Lake City and Clinton. **\$4.00 net**

Vol. T—Transcontinental Blue Book covering the main trunk line highways of the United States

Ready December, 1920.

Vol. 8—California, Nevada, Utah and Arizona, with extension routes into Oregon and New Mexico and to Yellowstone Park, Cheyenne, Denver and El Paso. **\$4.00 net**

Ready April, 1921.

Vol. 9—Washington, Oregon, Idaho, Montana, Wyoming, North Dakota, South Dakota, Northern Nebraska, Alberta, Saskatchewan, Manitoba and British Columbia, with extension routes to San Francisco, Salt Lake City, Denver and Minneapolis. **\$4.00 net**

Ready May, 1921.

Vol. 10—Wisconsin, Minnesota, Upper Peninsula of Michigan, Northern Iowa and Northern Illinois, with extension routes into eastern part of the Dakotas, also to Port Arthur, Winnipeg, St. Louis, Kansas City and St. Joseph, Mo. **\$4.00 net**

Ready June, 1921.

Vol. T—TRANSCONTINENTAL BLUE BOOK, including the main, heavy trunk lines of travel for use of long distance tourists, particularly for Coast to Coast tours. The volume is absolutely limited to these main highways and no other roads or side routes are given. **\$5.00 net**

Ready June, 1921.

Vol. A—NEW YORK METROPOLITAN BLUE BOOK. An intimate guide to New York City and surroundings within a radius of 50 miles. A complete New York guide not only for the automobile tourist but also for anyone who is living in or visiting New York City. **\$3.00 net**

TRADE SCHEDULE

	<i>Retail each</i>	<i>Price to the Trade each</i>
Vols. 1 to 10 inclusive	\$4.00	\$2.67
Volume A	3.00	2.00
Volume T	5.00	3.34

Terms 2% Ten Days

*Order from
Your Nearest Jobber*

If he cannot supply you
at once on above basis

WE WILL

The Automobile Blue Book Pub. Co.

243 West 39th Street
NEW YORK

910 S. Michigan Ave.
CHICAGO

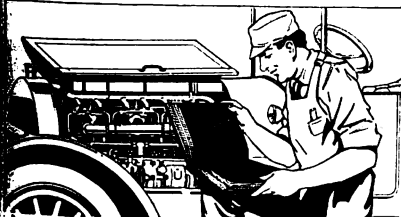
Collier's

**Stands for
Better Roads,
A wider
Use of Trucks,
More Cars**

WATCH

Collier's

THE NATIONAL WEEKLY



**HERE IS WHAT YOU NEED
TO RENDER BETTER SERV-
ICE AND MAKE MORE
MONEY, MR. MECHANIC.**

There is nothing similar on the market at any price that gives you the authentic, down-to-date information contained in the new issue of the Automotive Wiring Manual.

It contains 350 official blueprints of standard car manufacturers—a complete collection of official wiring diagrams on original blueprint form, bound in so you cannot lose them.

Don't be deceived into buying "something just as good" at a lower price. There is nothing published that gives you the real information contained in the Automotive Wiring Manual.

Send for your copy today. Price, \$15.00, delivered.

Automotive Publishing Co.
442 So. Dearborn St. Chicago

1700 Wiring Diagrams

**New Cars and Old Ones
Every One Authentic**

"The Auto Electrician's Guide"

Two handy volumes at a cost of less than a cent apiece for diagrams that took us three years to compile.

Features: More diagrams at less cost.
Alphabetical Index.
Reliability.

Money order for \$15.00 will bring the "Auto Electrician's Guide" to you by return mail, post paid.

MICHIGAN STATE AUTO SCHOOL
344 Auto Bldg., 3729 Woodward Ave.
DETROIT, U. S. A.



MERCHANDISING ACCESSORIES

The Chicago Tribune has new ideas and improved methods on merchandising of accessories for automobiles and trucks in the Chicago Territory—the five States of Illinois, Indiana, Iowa, Michigan and Wisconsin, the world's best market for accessories.

These ideas will be of value to you if you have anything to sell in this market.

The Chicago Tribune
(THE WORLD'S GREATEST NEWSPAPER)

Please mention The Automobile Trade Directory

BOUQUET HOLDERS—See Holders, Bouquet

BOW CLAMPS—See Holders, Top

BOW CLAMPS FOR FORDS—See Clamps, Top Bow

BOW DRESSING MACHINES—See Machines, Top Bow Dressing

BOW HOLDERS—See Holders, Top

BOW RESTS—See Rests, Bow

BOW SEPARATORS—See Separators, Bow

BOW SOCKETS—See Sockets, Bow

BOWS, Top

Acme—See Starr, D. H.

Brown & Co., S. N., 111 Commercial St., Dayton, O.

Campbell & Dann Mfg. Co., Tullahoma, Tenn.
Conestoga Bending Works, 545 N. Market St., Lancaster, Pa.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Delphos Bending Co., 905 S. Main St., Delphos, O.

Empire—See Skeens Empire Bending Works.
Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.

Lebzelter & Son Co., Philip, 241 N. Queen St., Lancaster, Pa.

Mengel Co., Louisville, Ky.

Milliken, Geo. W., Muncie, Ind.

Mossman, Yarnelle & Co., Pearl St., Fort Wayne, Ind.

Shepard & Sons, H. G., James & River Sts., New Haven, Conn.

Skeens Empire Bending Works, 114 S. Christian St., Lancaster, Pa. "Empire."

Starr, D. H., Highland, N. Y. "Acme."

Steelclad Auto Bow Co., Holland, Mich.

Ten Elek, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Union Bow Co., 725-25 Superior Ave., N. W., Cleveland, O.

Wayne Steering Wheel & Bow Co., Wayne, Mich.

Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.

BOWS, TOP CONVERTING—See Converters, Top

BOX LOCKS—See Locks, Cabinet and Pad; also Catches, Spring

BOX PROTECTORS FOR FORDS—See Protectors, Coil Box

BOXES, BATTERY—See Boxes, Metal Battery; also Boxes, Wood Battery; also Boxes, Motorcycle Metal Battery

BOXES, BATTERY, FOR FORDS—See Boxes, Tool

BOXES, COIL—See Boxes, Spark Coil

BOXES, CURB—See Boxes, Standard and Curb

BOXES, HOSE—See Boxes, Standard and Curb

BOXES, LUNCH—See Hampers, Touring

BOXES, Metal Battery

(For carrying battery on running board of car. See also Holders, Battery)

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New York and New England Distributors for Standard Boxes.) (See page 243.)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Cornwall Mfg. Co., Cleveland, O. (See page 937.)

Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 619 to 622.)

F-B Electric & Mfg. Co.—See Fairbanks Co.
Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Merts Mfg. Co., John, Water & Decatur Sts., Sandusky, O.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Morrison & Sons, Frank, 1330 W. 11th St., Cleveland, O. (See page 937.)

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Pandolfo Mfg. Co., St. Cloud, Minn.

Standard Steel Box Co., Villars Ave., Bridgeville, Pa.

Tipton Mfg. Co., Tipton, Ia. "Tip Top." (See page 383.)

Tip Top—See Tipton Mfg. Co.

Victor—See Corcoran-Victor Co.

Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)

BOXES, Metal Tool

(For Tool Bags—See Bags, Tool)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (New York and New England Distributors for Standard Boxes.) (See page 243.)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Cornwall Mfg. Co., Cleveland, O. (See page 937.)

Derby Coppersmithing & Sheet Metal Contracting Co., First & Carolina Sts., Derby, Conn.

Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.

Dow Wire & Iron Works, Louisville, Ky. (See page 159.)

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

Gray Specialty Co., 148 Avon Ave., Newark, N. J.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Lupton's Sons Co., David, Allegheny & Tullip Sts., Philadelphia, Pa.

Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.

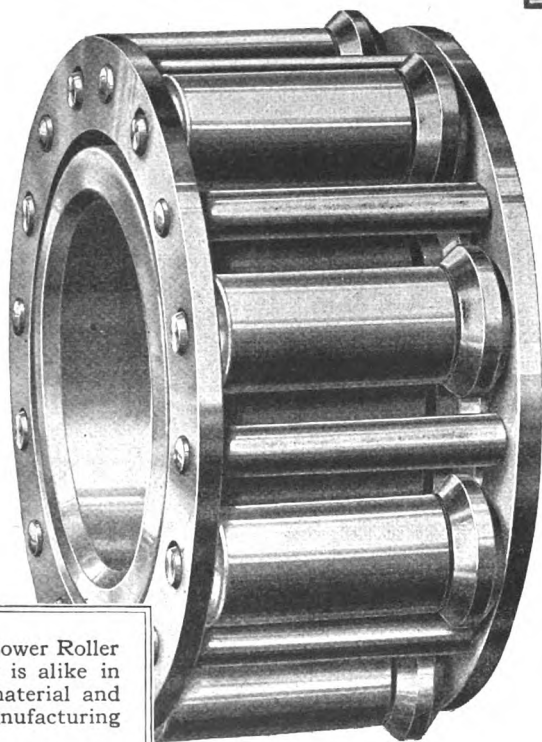
Mitchell & Sons, G. F., 6501 Cedar Ave., Cleveland, O.

Pandolfo Mfg. Co., St. Cloud, Minn.

Everything is listed under the NOUN or principal word

CARRIES THE LOAD

TAKES THE THRUST



EVERY Bower Roller Bearing is alike in quality of material and degree of manufacturing accuracy.

Pre-determined standards and careful inspection regulates that.

BOWER
ROLLER BEARING CO.
Detroit Michigan

Exclusive Bower Features

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.



Please mention The Automobile Trade Directory

BOXES, Metal Tool (Continued)

Standard Steel Box Co., Villars Ave., Bridgeville, Pa.
Victor—See Corcoran-Victor Co.

BOXES, Metal Tool, for Fords

Atlas Mfg. Co., W. Central Ave., Orlando, Fla.
Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
Hayes Mfg. Co., 4430 Maybury Grand Ave., Detroit, Mich.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Peerless—See Corcoran Mfg. Co.

BOXES, Motor Boat Stuffing

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y.
Eisenbrandt, F. B., Light St., Baltimore, Md.
Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.
Monarch Valve Co., 112 Front St., Brooklyn, N. Y.
Upon-Walton Co., 1310 W. 11th St., Cleveland, O. (See page 815.)
Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

BOXES, Motor Boat Underwater Exhaust

(See also Mufflers)

Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.

BOXES, Motorcycle Metal Battery

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 521.)

BOXES, Motorcycle Metal Tool

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 521.)

BOXES, Sand

(For attaching to car for sending slippery roads to prevent skidding)

Surface Grip Corp., 4 W. 21st St., Baltimore, Md.

BOXES, Sheet Metal Tote

(Shop Boxes and Barrels)

Acme Sheet Metal & Mfg. Co., 2343 Lakeside Ave., Cleveland, O.
All-Steel-Equip Co., 150 John St., Aurora, Ill.
Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.

Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.

Hart & Hutchinson Co., New Britain, Conn.
Hettis Co., Dime Bank Bldg., Detroit, Mich.

Kilbourne & Jacobs Mfg. Co., Columbus, O.

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Leetonia Boiler Co., Leetonia, O.

Lupton's Sons Co., David, Allegheny & Tulip Sts., Philadelphia, Pa.

Lyon Metallico Mfg. Co., Montgomery St., Aurora, Ill.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."

Mecco—See Manufacturing, Equipment & Engineering Co.

N. B.—See New Britain Machine Co.

New Britain Machine Co., Chestnut St., New Britain, Conn. "N. B."

Ohio Mfg. Co., Painesville, O.

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.

Scalfe & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.

Sterling Wheelbarrow Co., 64th & Pullen Aves., Milwaukee, Wis.

BOXES, SPARE LAMP BULB—See Cases, Extra Lamp Bulb**BOXES, Spark Coil**

Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.

Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.

West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, SPRING OILING—See Cups, Spring Leaf Lubricating**BOXES, Standard and Curb**

(For installing at curb for free air and water service)

Auto Camp Stove Co.—See Dickerson, C. A.

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.

Dickerson, C. A., Fisher Bldg., Chicago, Ill. (Sole Distributors for Auto Camp Stove Co., Fort Wayne, Ind.)

Eco—See Western Mfg. Co.

Hale Electric & Engineering Co., Cleveland, O. (See page 157.)

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Midvale Machine Works—See Wesco Supply Co.

Romort Mfg. Co.—See Zinke Co.

Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 923.)

Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)

Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."

Williams-Loper, 11 Ohio St., Oshkosh, Wis.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 688 and 689.)

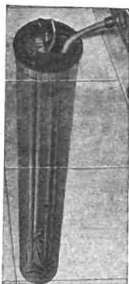
Everything is listed under the NOUN or principal word

HALE CURB BOXES

ARE



AIR HOSE RETRIEVERS



They keep the hose
out of the way and
out of sight at all
times and do it
AUTOMATICALLY
NOTHING TO

RUN INTO
NOTHING TO
STUMBLE OVER
HOSE ALWAYS
ACCESSIBLE

For the Garage floor
or sidewalk at curb.

The Hale Electric and Engineering Co.
Manufacturers of automatic motor-driven
air compressors and all appliances.
CLEVELAND, O.

U. S. A



WITH THE PHILCO SLOTTED RETAINER
Guaranteed Two Years

The longest and strongest
guarantee of any pleasure car,
starting, lighting and ignition
battery. Made possible by the
Diamond Grid, the Quarter-
Sawed Hardwood Separators
and the new patented Philco
Retainer.

A booklet covering in detail
this powerfully advertised
"Cord Tire Battery" will be
sent upon request. We've an
interesting proposition for
high-grade dealers as well as

**THE RIGHT BATTERY FOR
YOUR AUTOMOBILE**

**Philadelphia Storage Battery
Company**

Ontario & O Sts., Phila., Pa.



Manufacturers, Attention!

Have you any New Annular
Ball Bearings, Roller Bear-
ings or Steel Balls, now
Obsolete with you, of which
you are desirous of disposing—

We are specialists in this line,
and any material of this nature
offered us, will be given prompt
and intelligent consideration



1311 Woodward Ave.

DETROIT, MICH.

HYATT ROLLER BEARINGS

WHEREVER wheels
turn—motor vehicle,
tractor, factory, mine—
there you will find Hyatt
bearings reducing friction,
saving wear, tear and labor.

HYATT ROLLER BEARING CO.

Motor Bearings Div.
DETROIT

Tractor Bearings Div.

CHICAGO
Industrial Bearings Div.
NEW YORK CITY



Please mention The Automobile Trade Directory

BOXES, Storage Battery

Hartzell, Geo. W., Piqua, O.
 McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
 Mers & Son, G., 112-18 W. Superior St., Chicago, Ill. (See page 159.)

BOXES, STUFFING—See Boxes, Motor Boat Stuffing**BOXES, TOOL—See Boxes, Metal Tool; also Boxes, Wood Tool; also Boxes, Motorcycle Metal Tool****BOXES, Tool and Battery, for Fords**

(Metal Tool and Battery Boxes for use on running board)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Globe Machine & Stamping Co., Cleveland, O. (See page 1059.)
 Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
 Mitchell & Son, G. F., 5501 Cedar Ave., Cleveland, O.
 U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis. (See page 1061.)
 Victor—See Corcoran-Victor Co.

BOXES, TOTE—See Boxes, Sheet Metal Tote**BOXES, UNDERWATER EXHAUST—See Boxes, Motor Boat Underwater Exhaust****BOXES, Wood Battery**

(For carrying battery on running board of car. See also Holders, Battery)

Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.
 Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
 Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
 Taggarts & McKinney, Milford, Mich.
 West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, Wood Tool

(For Tool Bags—See Bags, Tool)

Only Grease Gun Co., Newton, Iowa.
 Platt-Rubin Co., 2522-26 E. Western Ave., Chicago, Ill.
 Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
 West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, Wrench and Small Tool

Mers & Son, G., 112-18 W. Superior St., Chicago, Ill. (See page 159.)

BRACES, Drive Shaft Housing, for Fords

Stewart, C. F., Wichita, Kans.

BRACES, FENDER, FOR FORDS—See Braces, Mud Guard**BRACES, HOUSING FOR FORDS—See Braces, Drive Shaft Housing****BRACES, Mud Guard or Fender, for Fords**

(Small metal clamps for fastening mud guard and apron together to prevent rattling)

BB—See Bayne Mfg. Co.
 Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 669.)
 Bracefords—See Prince Mfg. Co.
 Dunford—See Dunn Mfg. Co.
 Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia. "Dunford."
 Edelmänn & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 249.)
 Masura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

BRACES, Running Board, for Fords

(Fittings to reinforce or supplement the running board hangers to eliminate sagging of the running boards)

American Simplex Co., 2101 W. 16th St., Anderson, Ind. "Simplex."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Braces.) (See page 243.)
 BB—See Bayne Mfg. Co.
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 669.)
 Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
 Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 Bracefords—See Prince Mfg. Co.
 Brewer Tichenor Corp., Cortland, N. Y. (See page 573.)
 Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Bull Dog—See Fulton Co.
 C. M. & D.—See Chicago Mfg. & Distributing Co.
 Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo.
 Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Dow Wire & Iron Works, Louisville, Ky. (See page 159.)
 Dunham Co., Thomas, Aurora, Ill. (See page 163.)
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for W. H. Thomas Mfg. Co., Milwaukee, Wis. "Bulldog.") (See page 1019.)

Everything is listed under the NOUN or principal word



BOXES

G. MERZ & SON

112-118 West Superior St.
CHICAGO, ILL.

Manufacturers of All Styles of

Lock Corner Boxes

such as

Battery, Wrench, Auto Parts
and

Accessories,
and Fancy
Varnished

BOXES



Real Satisfactory Service

When You Want Real Satisfactory Service. Use Our

QUALITY PRODUCTS
For Automobiles—Trucks—Tractors

Our Specialties

A. B. C. Line, Cabs and Bodies. All Weather Cabs, all styles bodies.

Castings. Of Every Description. Steel, grey iron, malleable, brass, aluminum.

Forgings. For every purpose.

Stamped Metal. Of every shape.

Your specifications solicited

AUTO PRODUCTS COMPANY

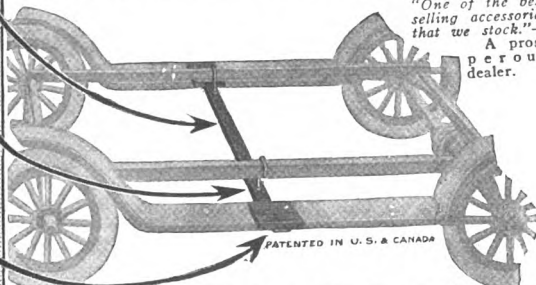
Station "H"
CINCINNATI, OHIO



Dow Body Brace for Ford Cars

Thousands of Ford Owners are getting more pleasure and longer life from their cars by the use of the Dow Body Brace. It makes riding easier, strengthens the running board, stops annoying squeaks and rattles, avoids side play and prevents broken springs. Easily attached. Fits all Fords—any model. Undoubtedly one of the greatest boons to the Ford Owner known.

*"One of the best selling accessories that we stock."—
A prosperous dealer.*



PATENTED IN U. S. & CANADA

Made of heavy $1\frac{1}{2} \times 1\frac{1}{2}$ inch steel angle, heavy steel hooks and oak silencers that fit under the running board.

Manufactured exclusively by

Dow Wire & Iron Works
Incorporated
Louisville Kentucky

Please mention The Automobile Trade Directory

BRACES, Running Board, for Fords (Continued)

- Gahn-McCormick Co., 806 E. Main St., Streator, Ill. (See page 249.)
Hall Air Lock & Railway Supply Co., Oakville, Iowa.
Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
Midway Mechanical Co., St. Paul, Minn.
Perfection Parts Co., 2163 Barnard St., Cincinnati, O.
Presto—See Metal Specialties Mfg. Co.
Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."
Simplex—See American Simplex Co.
Standley-Skid Chain Co., Boone, Iowa. (See page 381.)
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 895.)
Star-K—See Stark-Inland Machine Works.
Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
Thomas Mfg. Co., W. H.—See Fulton Co.
Vaughn-Harris Co., Vermillion, S. Dak.
W-A—See Whetstone & Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
Williams Wagon Works, Third St., Macon, Ga.

BRACES, Steering Column, for Fords

(Brace to attach to dashboard to steady steering column)

- Apco Mfg. Co., 703 Eddy St., Providence, R. I.

BRACKETS, Automatic Headlight

(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)

- Common-Sense Light Control Co., Lindsey Bldg., Dayton, O.
Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
Dempsey Co., James E., 406 State St., Manitowoc, Wis. "Jed-Ray."
Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Brackets.) (See page 243.)
Hofweber Mfg. Co., 121 S. Front St., La Crosse, Wis.
Jed-Ray—See Dempsey Co.
Pennock—See Specialty Mfg. Co.
Specialty Mfg. Co., Minerva, O. "Pennock."
Wilcox Patents, Chicago Savings Bank Bldg., Chicago, Ill.

BRACKETS, Automatic Headlight, for Fords

(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)

- Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
Hawes Automatic Headlight Co., 2721 S. Michigan Ave., Chicago, Ill. (See page 837.)

- Ospeco—See Michigan Auto Products Co.
Reliance Spring & Mfg. Co., 3911 Second Ave., Brooklyn, N. Y.
Riblet Mfg. Co., 502 Maxwell Bldg., Long Beach, Cal. (See page 1007.)

BRACKETS, Stationary Headlight

- Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.

BRACKETS, HEADLIGHT, FOR FORDS— See Brackets, Automatic Headlight

BRACKETS, Side and Tail Lamp

- Brewer Tishener Corp., Cortland, N. Y. (See page 573.)
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection."
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Perfection—See Martin & Co.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Strisby & Foote Co., 301 Ogden St., Newark, N. J.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

BRACKETS, Timer Elevating, for Fords

- Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Milwaukee Air Power Pump Co., Milwaukee, Wis. "Sta-Kleen.")
Mill City Co., Minneapolis, Minn.
Milwaukee Air Power Pump Co.—See Fulton Co.
Sta-Kleen—See Fulton Co.
Thomas-Andrews Corp., Waukegan, Ill. (See page 951.)

BRACKETS or SUPPORTS, Engine Repair, for Fords

- Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Backus, C. R., Mystic, Conn. "Johnson."
Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)
Guaranty Motors Co., Cambridge, Mass. (See page 433.)
Johnson—See Backus, C. R.
Lake Erie Accessories Co., 3405 Perkins Ave., Cleveland, O.
Rich Mfg. Co., 1777 Broadway, New York, N. Y.
Simonsen Iron Works, Sioux Rapids, Iowa. "Victory."

Everything is listed under the NOUN or principal word

GURNEY BALL BEARINGS

Information on Interchangeable Sizes given by our distributors. They carry complete stocks

AREQUIPA, PERU
James Vucetisti
ATLANTA, GA.
Southern Bearings Co.
39 Luckie St.

ATZCAPOTZALCO,
D. F., MEXICO
Fernando Diaz Dufoo
Colonia del Imparcial 18

BOSTON, MASS.
R. & L. Bearings Co.
161 Massachusetts Ave.

BUFFALO, N. Y.
Buffalo Bearings Co.
445 Elmwood Ave.

CHICAGO, ILL.
Ahlberg Bearing Co.
317 East 29th St.

CHICAGO, ILL.
L. C. Smith Bearings Co.
2204 Michigan Ave.

CINCINNATI, OHIO
Ahlberg Bearing Co.
804 Race St.

CINCINNATI, OHIO
*E. J. Hebbard
205 E. 8th St.

CLEVELAND, OHIO
The Ahlberg Bearing Co.
1838 Euclid Ave.

DALLAS, TEXAS
Western Gear & Parts Co.
2105 Commerce St.

DES MOINES, IOWA
Iowa Bearings Co.
519 W. 12th St.

DETROIT, MICH.
Detroit Ball Bearing Co.
2812 Grand River Ave.

KANSAS CITY, MO.
Ahlberg Bearing Co.
207 East 18th St.

KANSAS CITY, MO.
L. C. Smith Bearings Co.
116½ E. 20th St.

LOS ANGELES, CAL.
Ahlberg Bearing Co.
325 Pico St.

MEMPHIS, TENN.
Ahlberg Bearing Co.
239 Madison Ave.

MILWAUKEE, WIS.
Ahlberg Bearing Co.
459 Milwaukee St.

MINNEAPOLIS, MINN.
Ahlberg Bearing Co.
926 Marquette Ave.

MINNEAPOLIS, MINN.
Reinhard Bros. Co., Inc.
NEW ORLEANS, LA.

Ahlberg Bearing Co.
748 St. Charles St.

NEW YORK CITY
R. & L. Bearings Co.
1819 Broadway

The Sign of

OMAHA, NEB.

Ahlberg Bearing Co.
1724 St. Marys Ave.

PHILADELPHIA, PA.
R. & L. Bearings Co.
821 North Broad St.

PORTLAND, ORE.
Ahlberg Bearing Co.

ST. LOUIS, MO.
Ahlberg Bearing Co.
2831 Locust St.

SALT LAKE CITY, UTAH
Geo. J. Silver
1207 So. 8th East St.

SAN ANTONIO, TEX.
Standard Motor Sales Co.
314 Alamo Plaza

SAN FRANCISCO, CAL.
Irvin J. Silverberg & Co.
541 Van Ness Ave.

SAN FRANCISCO, CAL.
Ahlberg Bearing Co.
1116 Polk St.

SEATTLE, WASH.
Northwest Bearings Co.
East Pike at Belmont

SYDNEY, AUSTRALIA
William Easy & Co.

TOLEDO, OHIO
*Toledo Tire & Supply Co.
241 Erie St.



Our Authorized Distributors and *Sub-distributors
GURNEY BALL BEARING COMPANY

Conrad Patent Licensee

Main Office and Factory: JAMESTOWN, N. Y.

18100

Please mention The Automobile Trade Directory

BRACKETS or SUPPORTS, Engine Repair, for Fords

Simpson Mfg. Co., 205 W. Main St., Newark, O. (See page 163.)

Victory—See Simonsen Iron Works.

Wilkes-Barre Welding Co., 6 W. Ross St., Wilkes-Barre, Pa.

BRAKE ADJUSTERS—See Adjusters, Brake

BRAKE BAND ADJUSTERS FOR FORDS—
See Adjusters, Brake and Reverse Band

BRAKE BAND RIVETING JIGS FOR FORDS—See Jigs, Brake Band Riveting

BRAKE BAND RIVETING MACHINES—
See Machines, Brake Band Riveting

BRAKE BANDING FOR FORDS—See Lining, Brake

BRAKE BANDING CUTTERS—See Cutters, Brake Lining

BRAKE BANDS—See Brakes, Expanding and Contracting; also Lining, Brake

BRAKE CABLE—See Rope, Steel Wire

BRAKE COMPOUNDS—See Dressing, Brake

BRAKE DRUMS—See Drums, Brake

BRAKE EQUALIZERS FOR FORDS—See Equalizers, Brake

BRAKE EQUALIZERS, TRAILER—See Equalizers, Trailer Brake

BRAKE FACING—See Lining, Brake

BRAKE LINING—See Lining, Brake

BRAKE LINING CUTTERS—See Cutters, Brake Lining

BRAKE ROD ANTI - RATTLES FOR FORDS—See Anti-Rattlers, Brake Rod; also Supports, Brake Rod

BRAKE ROD GUIDES FOR FORDS—See Supports, Brake Rod

BRAKE ROD SUPPORTS FOR FORDS—
See Supports, Brake Rod

BRAKE RODS—See Rods, Brake

BRAKE SHOES FOR FORDS—See Shoes, Brake

BRAKES, Air

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

L-W—See Lane Air Brake Co.

Lane Air Brake Co., 995 Market St., San Francisco, Cal. "L-W."

Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, O.

BRAKES, COASTER—See Brakes, Motorcycle

BRAKES, CONTRACTING—See Brakes, Expanding and Contracting

BRAKES, CONTRACTING FOR FORDS—
See Brakes, Emergency Contracting

BRAKES, Electric

Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)

BRAKES, Emergency Contracting. for Fords

(*Internal contracting band brakes designed to operate on regular brake drum*)

A-C Mfg. Co., 2251 W. Grand Ave., Chicago, Ill.

Bennett Mfg. Co., 461 Second St., Oakland, Cal.

Clipper Tool Co., 284 Mills St., Buffalo, N. Y.

Clapp-Eastham Co., 139 Main St., Cambridge, Mass. "Holdford."

Duplex—See Raybestos Co.

Duplex Transmission Co., 3159 Army St., San Francisco, Cal.

Master Auto Accessory Co., 1601 Michigan Blvd., Chicago, Ill.

Master Service Co., 2205 S. Main St., Los Angeles, Cal. (See page 163.)

Moore—See Tractor-Train Co.

Perfection Parts Co., 4205 Glenway Ave., Cincinnati, O.

Pia Safe Co., Brookville, Pa.

Raybestos Co., Bridgeport, Conn. "Raymond," "Duplex." (See page 577.)

Raymond—See Raybestos Co.

Rieschmuller Mfg. Co., 3442 19th St., San Francisco, Cal.

Tractor-Train Co., 1244 Wall St., Los Angeles, Cal. "Moore." (See page 441.)

BRAKES, Expanding and Contracting

Duplex—See Raybestos Co.

Landry Mfg. Co., 50 Nye St., New Bedford, Mass.

Raybestos Co., Bridgeport, Conn. "Raymond," "Duplex." (See page 577.)

Raymond—See Raybestos Co.

BRAKES, Hydraulic

Courtesy Service & Sales Co., 1302 S. Wabash Ave., Chicago, Ill. (Illinois Distributors for Four Wheel Brakes.) (See page 841.)

Four Wheel Hydraulic Brake Corp., Detroit, Mich.

BRAKES, Motorcycle

Corbin Screw Corp., High St., New Britain, Conn.

Eclipse Machine Co., Elmira, N. Y. "Morrow." (See page 163.)

Morrow—See Eclipse Machine Co.

New Departure Mfg. Co., Bristol, Conn. (See page 111.)

BRAKES, SPRAG FOR FORDS—See Stops, Ratchet

BRASS CASTINGS—See Castings, Bronze and Brass

BRASS CHECKS—See Checks, Brass Time, Tool and Pay

BRASS HAMMERS—See Hammers, Brass and Copper

Everything is listed under the NOUN or principal word

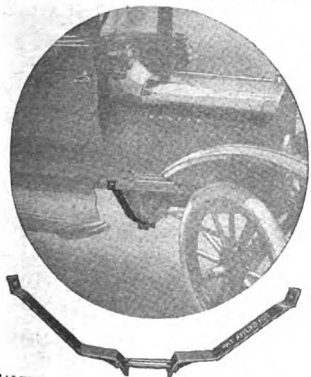
FOR
ELECTRIC
STARTERS

BENDIX
ECLIPSE
DRIVE

AUTOMATIC
ENGAGING &
DISENGAGING

194 Motor Car and Truck Builders Use It
ECLIPSE MACHINE CO. ELMIRA
N. Y.

A FORD NECESSITY



DEALERS: Here is an article that is needed by every owner of a Ford Car or Truck in your territory. It will positively prevent the breaking of Ford Crankcase Arms or can be used to repair them after being broken. Eliminates vibration. Saves time, trouble and expense. Made from best materials and may easily be put on in a few minutes.

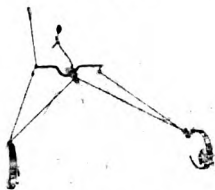
JOBBER: The SIMPSON CRANKCASE SUPPORT is such a quick seller and in such constant demand by Ford owners that it is popular with dealers everywhere. Prices and terms to the trade on request.

THE SIMPSON MANUFACTURING CO.
205 West Main Street Newark, Ohio

The Master Brake

For Ford Cars and Trucks

Designed to Meet a Demand for an Efficient and Dependable Braking System for the Ford



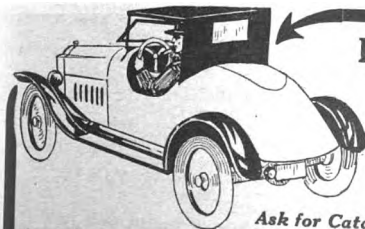
An Absolute Necessity for Every Ford Car and Truck

Master brakes have efficient equalizers. Brake bands are adjustable, all directions, to compensate for wear. An exclusive feature. Easily and quickly installed with regular Ford tool equipment and without the drilling of holes in any part of the Ford chassis.

A model for each individual need.
Write for Descriptive Folder

Excellent proposition to Jobbers and Dealers.

MASTER SERVICE COMPANY
2205 South Main St., Los Angeles, Cal.



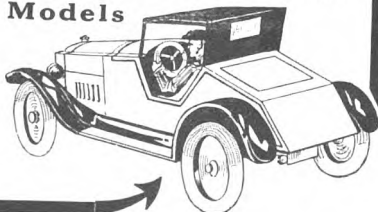
Ask for Catalog

THOMAS DUNHAM CO.
AURORA, ILLINOIS U. S. A.

DUNHAM BODIES

For FORD & CHEVROLET Chassis

4 Models



Please mention The Automobile Trade Directory

BRASS, IRON LINED TUBING—See Tubing, Iron Lined

BRASS MALLET—See Hammers, Brass and Copper

BRASS MELTING FURNACES—See Furnaces, Brass Melting

BRASS RADIATOR CAPS—See Caps, Brass Radiator

BRASS RIVETS—See Rivets, Brass

BRASS, ROD—See Brass and Copper, Sheet and Rod

BRASS, SHEET—See Brass and Copper, Sheet and Rod

BRASS TESTING INSTRUMENTS—See Instruments, Metal Testing

BRASS TUBING—See Tubing, Brass

BRASS and COPPER, Sheet and Rod

(For Tubing—See Tubing, Brass; for Castings—See Castings, Brass and Bronze)

American Brass Co., Waterbury, Conn. (See page 165.)

American Brass Co. (Kenosha Branch), Kenosha, Wis.

Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

Buffalo Copper & Brass Rolling Mill, Military Rd. & Hertel Ave., Buffalo, N. Y.

Chase Rolling Mill Co., Grand St., Waterbury, Conn.

Cleveland Brass & Copper Mills, Cleveland, O. Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.

Detroit Copper & Brass Rolling Mills, Clark Ave. & Wabash R. R., Detroit, Mich.

International Nickel Co., 48 Exchange Pl., New York, N. Y. "Monel Metal."

Manhattan Brass Co., 828 E. 26th St., New York, N. Y.

Michigan Copper & Brass Co., 5351 W. Jefferson Ave., Detroit, Mich. "Wolverine."

Monel Metal—See International Nickel Co.

New Haven Copper Co., Seymour, Conn.

New Jersey Tube Co., Kingland Ave., Harrison, N. J.

Randolph-Clowes Co., 384 Bank St., Waterbury, Conn.

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.

Seovill Mfg. Co., Waterbury, Conn. (See page 831.)

Seymour Mfg. Co., 87 Franklin St., Seymour, Conn.

Somers Co., 95 Baldwin Ave., Waterbury, Conn.

Stamford Rolling Mills Co., 347 Madison Ave., New York, N. Y.

Taunton-New Bedford Copper Co., Taunton, Mass.

Winchester Brass & Copper Co., Meadow St., Winsted, Conn.

Wolverine—See Michigan Copper & Brass Co.

BRAZERS, CAST IRON—See Welding, Autogenous

BRAZING COMPOUNDS—See Compounds, Brazing

BRAZING FLUX—See Compounds, Brazing

BRAZING TORCHES—See Torches, Gasoline; also Torches, Acetylene; also Machines, Autogenous Welding

BREAST DRILLS—See Drills, Breast

BREATHING PIPES FOR FORDS—See Breathers, Crank Case

BREATHERS, Crank Case, for Fords

(Breather pipe with large filler opening to take the place of steel cap on small oil filling hole on front end of motor)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)

Dunham Co., Thos., Aurora, Ill. (See page 163.)

Empress—See Bowen Products Corp.
Excelsior Auto Parts & Supply Co., Batavia, Conn.

Greer, Fredric, 525 W. Van Buren St., Chicago, Ill.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Vortex Mfg. Co., 105 W. Commercial St., Pomona, Cal.

BROACHING MACHINES—See Machines, Broaching

BROACHING PRESSES—See Machines, Broaching

BROADCLOTH, Upholstery

(See also Trimmings, Cloth and Carpet)

American Mills Co., 895 Broadway, New York, N. Y.

American Woolen Co. of N. Y., 225 Fourth Ave., New York, N. Y.

Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. "Sealtex." (See page 257.)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 165.)

Laidlaw Co., 16 W. 40th St., New York, N. Y. (See pages 255 and 309.)

Roy Woolen Co., 500 Broadway, Watervliet, N. Y.

Sealtex—See Bradford Fabrics Co.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 514.)

Slater & Sons, Webster, Mass.

Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)

Strongtex—See Strong Textile Co.

Terhune, Yereance & Wolf, 215 Fourth Ave., New York, N. Y. (Mill Agents.) (See page 259.)

Waterloo Woolen Mfg. Co., 228 E. Main St., Waterloo, N. Y.

Everything is listed under the NOUN or principal word

FABRICS BRIDGEPORT FABRICS

We supply 80% of the enclosed car manufacturers and body builders of the United States with Bridgeport Fabrics, together with all accessories for the complete furnishing of correct motor car interiors.

PROTEX

a new material for seat covers for enclosed cars.

TUFHYDE

better than leather for upholstery.

TOPSEMAIL

the quality top material.

**THE BRIDGEPORT COACH
LACE CO.**

813 Wood Avenue
Bridgeport, Conn.

New York Showrooms, 1785 Broadway
2740 McCue Traffic Way, Kansas City
3729 Prospect Ave., Cleveland
Blumenthal Bros., Chicago
301 Peachtree St., Atlanta
Sorel Iron Store Co., San Francisco, Los
Angeles, Seattle.



The Auto Data Book

(Handy Pocket Edition)

Handsomely Bound in Cloth

350 pages of valuable information alphabetically arranged for quick reference.

You cannot afford to be
without it.

A Wealth of Knowledge

Price **\$2.50** a copy while they last
Former Price \$3.50

Send Check or Money Order

The City Editor Publishing Co.
15 Park Row NEW YORK CITY

Send for your copy now

The American Brass Company

manufacturers of

BRASS COPPER and NICKEL SILVER

in all forms of

Sheet, Wire, Rods and
Tubes

Brass and Copper Automobile
Radiator Core Metal

BRASS, BRONZE, COPPER
Sheets for Blanking, Drawing
and Spinings

Phosphor Bronze Seamless Tubes
for Bearings and Bushings

EXTRUDED METAL SHAPES
DIE PRESSED METAL PARTS

Special alloys in various shapes
and sizes for specific purposes

MAIN OFFICES

Waterbury, Conn., U. S. A.

MILLS AND FACTORIES

Ansonia Branch	Buffalo Branch
Ansonia, Conn.	Buffalo, N. Y.
Kenosha Branch	Torrington Branch
Kenosha, Wis.	Torrington, Conn.
Waterbury Branch, Waterbury, Conn.	

OFFICES, STORES AND RESIDENT AGENTS

New York, N. Y., 195 Broadway
Chicago, Ill., 29 East Madison St.
Boston, Mass., 173 High St.
Providence, R. I., 131 Dorrance St.
Cincinnati, Ohio, 1026 Union Central Bldg.
Cleveland, Ohio, 1118 Citizens Bldg.
Philadelphia, Pa., 1401 Widener Bldg.
Pittsburgh, Pa., 904 Union Bank Bldg.
Detroit, Mich., 455 Bank Bldg.
San Francisco, Cal., 412-414 Balfour Building
St. Louis, Mo., Security Bldg.

Please mention The Automobile Trade Directory

BROKERS and BANKERS, Financial

(Covering only Brokers and Bankers who Advertise in this Publication)

Commercial Credit Co., Baltimore, Md. (See page 176.)

Continental Guaranty Corp., 248 Madison Ave., New York, N. Y. (See page 390.)

BRONZE-BACKED BEARINGS—See Bearings and Bushings

BRONZE-BACKED BUSHINGS—See Bearings and Bushings

BRONZE, BEARING—See Metals, Bearing

BRONZE BUSHINGS—See Bushings, Bronze; also Metals, Bearing

BRONZE CASTINGS—See Castings, Bronze and Brass

BRONZE PAINTS—See Paints, Aluminum

BRONZE ROPE—See Rope, Bronze Wire

BRONZE TESTING INSTRUMENTS—See Instruments, Metal Testing

BRONZE WIRE ROPE—See Rope, Bronze Wire

BROOMS, Steel Wire

(For cleaning garage and shop floors)

American Wire Brush Co., 202-04 Centre St., New York, N. Y. "Minerva."

Minerva—See American Wire Brush Co.

Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSH SANDERS, GENERATOR FOR FORDS—See Sanders, Generator Brush

BRUSHES, CAR WASHING—See Washers, Vehicle

BRUSHES, GENERATOR—See Brushes, Magneto

BRUSHES, Magneto, Starter and Generator

(Carbon, Metal and Woven Wire)

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.

American Carbon & Battery Co., East St. Louis, Ill.

Arrow—See Niehoff & Co.

Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.

Becker Bros., 23-31 N. Jefferson St., Chicago, Ill. (See page 109.)

Bee Cee—See Brown & Caine.

Brown & Caine, 2317-21 Calumet Ave., Chicago, Ill. "Bee Cee." (See page 301.)

Carballoy Products Co., Bellevue, O. (See page 271.)

Cartung Research & Mfg. Co., 160 John St., Brooklyn, N. Y.

Chapin Co., Chas. E., 201 Fulton St., New York, N. Y.

Colebaugh Self Lubricating Carbon Co., 1503 Columbia Ave., Philadelphia, Pa. "No-Spark."

Columbia—See National Carbon Co.

Corliss Carbon Co. (E. Bradford), Bradford, Pa.

Ebco—See Electric Brush Co.

Electric Brush Co., Dover, N. J. "Ebco."

Giffillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.

Graphalloy—See Graphite Metallizing Corp.

Graphite Metallizing Corp., 1050 Nepperhan Ave., Yonkers, N. Y. "Graphalloy."

Graphite Products Co., 5155 Wakefield St., Philadelphia, Pa.

Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y. (See page 169.)

Jeandron, W. J., 172 Fulton St., New York, N. Y. (Importer.) "Le Carbone."

Lance Mfg. Co., 247 Center St., New York, N. Y.

Le Carbone—See Jeandron, W. J.

Millwood-Bracket Co., 1801 Locust St., Des Moines, Iowa. (See page 169.)

National Carbon Co., Cleveland, O. "Pyramid." (See page 167.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. "Arrow." (See page 897.)

No-Spark—See Colebaugh Self Lubricating Carbon Co.

Ohio Carbon Co., 8219 Almira Ave., Cleveland, O.

Otter Mfg. Co., 243 W. 17th St., New York, N. Y.

Pyramid—See National Carbon Co.

Specialty Mfg. Co., Arlington, Mass. "Superior."

Speer Carbon Co., Theresa St., St. Marys, Pa. (See page 167.)

Stackpole Carbon Co., St. Marys, Pa.

Standard Motor Products Co., 43-45 E. 19th St., New York, N. Y.

Superior—See Specialty Mfg. Co.

U. S. G.—See United States Graphite Co.

United States Graphite Co., Saginaw, Mich. "U. S. G."

Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.

BRUSHES, Paint and Varnish

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Boars Head—See Fisher-Mitchell Co.

Bowditch, John F., 166 Commercial St., Boston, Mass.

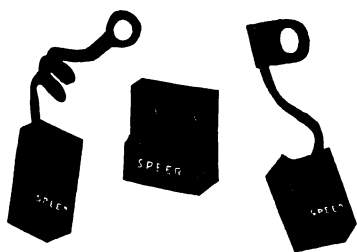
Bradley & Smith, 251 Pearl St., New York, N. Y.

Burton & Co., A. E., 75 Pearl St., Boston, Mass.

Clinton & Co., E., 2119 Arch St., Philadelphia, Pa.

Devco & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.

Eclipse Air Brush & Compressor Co., 79 Orange St., Newark, N. J.



**"The Brush
with a Reputation"**

Automobile Brushes

A brush, properly applied, for every starting and lighting system known to the automobile industry.

Every car owner realizes the service rendered by the lighting generator and starting motor. Speer Automobile Brushes make that service reliable.

Carried in stock by the leading jobbers, dealers, garages and repair shops. Specify "SPEER" when you have your brushes replaced.

Manufactured by

SPEER CARBON COMPANY

ST. MARYS, PA.

Exclusive Distributors

Gillette Bros., Smelting & Refining Company
New York Los Angeles
Kansas City Atlanta

SPEER

Columbia Pyramid Automotive Brushes

—ASSURE—

satisfactory	increased
service	sales and
when on	profits
starting	when
motors and	you
lighting	handle
generators	them

Your jobber has them or write to
NATIONAL CARBON COMPANY, Inc.
CLEVELAND, OHIO, U. S. A.

Mr. Manufacturer!

***If your Catalog is not
on file in our office—***

there is at least *the chance* that some of your new products are not properly listed in The Automobile Trade Directory.

The Automobile Trade Directory is as nearly infallible as it is possible for unceasing vigilance to make it.

An easy way to *make sure* is to put us on your mailing list, to send us your catalogs and other trade literature regularly.

Thousands of buyers are interested in what you are doing and they invariably use The Automobile Trade Directory as the bridge over which they reach the supply—the same bridge over which you must successfully reach your market.

Let us have your catalogs

The Automobile Trade Directory

243 West Thirty-ninth Street NEW YORK

Please mention The Automobile Trade Directory

BRUSHES, Paint and Varnish (Continued)

Fisher-Mitchell Co., 186 Mitchell St., New York, N. Y. "Boars Head."
 Gerts, Lumbard & Co., 154 W. Randolph St., Chicago, Ill.
 Hanlon & Goodman Co., 270-72 Pearl St., New York, N. Y.
 Miles Bros. & Co., 1957-67 Pitkin Ave., Brooklyn, N. Y.
 Packard Co., A., 166 Commercial St., Boston Mass.
 Rubberset Co., 56 Ferry St., Newark, N. J.
 Thayer & Co., P. E., Pawtucket, R. I.
 Thum, Chas. D., 150 N. Third St., Philadelphia, Pa.
 United Brush Manufactories, 202-05 Lafayette St., New York, N. Y.
 Whiting-J. J. Adams Co., John L., Boston, Mass. (See page 169.)

BRUSHES, Spark Plug

(Small Wire or Bristle Brushes for cleaning Spark Plugs)

American Wire Brush Co., 202-04 Centre St., New York, N. Y.
 North Ridge Brush Co., 252 Clark St., Freeport, Ill.
 Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSHES, STARTER—See Brushes, Magneto.

BRUSHES, Timer, for Fords

Hudson Motor Specialties Co., 1924 Arch St., Philadelphia, Pa.
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never Miss."
 Motor Specialties Co., Waltham, Mass.
 Never Miss—See Mil-Mac Mfg. Co.
 Redmond—See Riverside Specialty Works.
 Riverside Specialty Works, Riverside, Cal. "Redmond."
 Rush & Co., W. S., 108 N. Daly St., Los Angeles, Cal.

BRUSHES, VARNISH—See Brushes, Paint and Varnish

BRUSHES, WASHING—See Washers, Vehicle

BRUSHES, WHEEL—See Washers, Vehicle

BRUSHES, Wire Buffing

Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Harrison."
 Auto Tool Co., 532 Boston Blk., Minneapolis, Minn. "Roto."
 Ferro—See Ferrodowill Mfg. Co.
 Ferrodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."
 Harrison—See Auto-Tire Vulcanizing Co.
 Herold Mfg. Brush Co., Cleveland, O.
 Luther Grinder Mfg. Co., Milwaukee, Wis.
 Milwaukee Brush Co., Milwaukee, Wis.
 Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.
 Pelton Brush Co., Cleveland, O.
 Roto—See Auto Tool Co.

BUCKETS, Collapsible

(Collapsible or Folding Pails or Buckets for carrying in car for filling Radiators)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
 Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.
 Bemco—See B. E. Mfg. Co.
 Boko—See Defiance Welding Co.
 Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo.
 Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
 Duplex—See Planet Co.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Esco—See Economy Seat Co.
 Faultless—See National Mfg. Co.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
 Hinson—See Powers Mfg. Co.
 Martin Mfg. Co., 317 Forest Rose Ave., Lancaster, O.
 National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa. "Faultless."
 Planco—See Planet Co.
 Planet Co., 180 N. Elm St., Westfield, Mass. "Duplex." "Planco."
 Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 581.)
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Schaefer Tent & Awning Co., Denver, Colo. (See page 119.)
 Whitall-Tatum Co., 46-48 Barclay St., New York, N. Y.

BUCKLES, Strap

Anchor—See North & Judd Mfg. Co.
 Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
 Auveco—See Auto-Vehicle Parts Co.
 Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

BUCKLES, TURN—See Turn-Buckles

BUFFERS, ELECTRIC PORTABLE—See Drills, Electric Portable

BUFFERS, TIRE—See Machines, Electric Tire Buffing

BUFFERS, Tube Patching

(Small metal buffer to be used instead of sand-paper when preparing a tube for patching)

Cordell Mfg. Co., 709 Pine St., St. Louis, Mo.

Everything is listed under the NOUN or principal word



**WHITING-ADAMS
BRUSHES**

FAMOUS FOR THEIR QUALITY

Most extensive and best line of
Toilet Brushes in the world

Send for Illustrated Literature
JOHN L. WHITING-J. J. ADAMS CO.
Boston, U. S. A.

Brush Manufacturers for Over 109 Years
and the Largest in the World



We Are the Largest Distributors of

Automotive Electrical Equipment

In the World

Parts for all standard makes of Mag-
netos, Generators, Starters, Ammeters,
Distributors, etc.

MILBRACCO PRODUCTS

Ignition Parts.	Dash Lamps.
Distributor Caps and	Plugs and Sockets.
Rotars	Magneto and Distributor
Platinum, Tungsten and	Wrench Sets.
Silver Points.	Switches.
Magneto Parts.	Chains.
Condensers.	Coils.
Resistance Units.	Brushes.
Bendix Springs.	Cutouts.
Generator Gears.	Ammeters.
Platinum Files.	

All orders given prompt attention. Com-
plete price list sent on request.

MILLWOOD-BRACKET CO., Inc.

1001 Locust St.

Des Moines, Iowa

B.B.B.

*Stands for Quality
in all types of*

BRUSHES

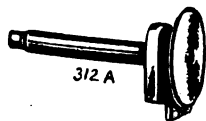
for

AUTOMOBILE STARTING MOTORS LIGHTING GENERATORS AND MAGNETOS

Write for Car List & Catalog

BECKER BROTHERS
23-31 North Jefferson St.
CHICAGO, ILLINOIS

Magneto and Ignition Replacement Parts



3/2 A

We are manufacturers of Platinum and
Tungsten Contacts, Starter, Generator,
and Magneto Brushes, Rotars, Distributor
Caps, Magneto Parts, Coils, Cutouts, etc.

GUARANTEED MAGNETO PARTS CO.

Branch Office: Los Angeles, Calif.

Main Office: 210 West 54th St.



Please mention The Automobile Trade Directory

BUFFING BRUSHES, WIRE—See Brushes, Wire Buffing

BUFFING COMPOUNDS—See Compounds, Buffing

BUFFING MACHINES, TIRE—See Machines, Electric Tire Buffing

BUILDINGS, PORTABLE—See Garages, Portable

BULB BOXES—See Cases, Extra Lamp Bulb

BULB CASES—See Cases, Extra Lamp Bulb

BULBS, HEADLIGHT—See Lamps, Miniature Incandescent

BULBS, HORN—See Bulbs, Rubber Horn

BULBS, INCANDESCENT LAMP—See Lamps, Miniature Incandescent

BULBS, LAMP—See Lamps, Miniature Incandescent

BULBS, Rubber Horn

Alpha—See Parker, Stearns & Co.
 Davol Rubber Co., Providence, R. I.
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Mechanical Rubber Co., G. & P. & Nickel Plate R. R., Cleveland, O.
 Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 United States Tire Co., 1790 Broadway, New York, N. Y.

BUMPERS, Automobile

(For protecting Lamps and Radiators; also for rear of car)

Acme—See Clevenger Engineering & Sales Co.
 Ajusto—See Central Brass & Fixture Co.
 American Chain Co., Bridgeport, Conn. (See page 543.)
 American Metal Parts Mfg. Co.—See Fulton Co.
 American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 Au-To Compressor Co., Wilmington, O. "Oro."
 Autoguard—See Stewart-Warner Speedometer Corp.
 Badger Mfg. Corp., Milwaukee, Wis. "Simplex," "Protex," "Clover Leaf," "Presto." (See page 171.)
 Balcrank—See Cincinnati Ball Crank Co.
 Bell—See Safety Bumper Co.
 Bellevue Mfg. Co., Bellevue, O. (See page 311.)
 Better—See New Era Spring & Specialty Co.
 Biflex Products Co., Waukegan, Ill. "Boulevard," "Crescent," "Traffic." (See page 175.)
 Boulevard—See Biflex Products Co.
 Buckeye—See Central Brass & Fixture Co.
 Bull Dog—See Toledo Cable Co.
 Buttwell Bumper Co., 16 W. 61st St., New York, N. Y.
 C. G. Spring Co., Kalamazoo, Mich. "McGregor." (See page 881.)
 Cambria Spring Co., 916-18 S. Los Angeles St., Los Angeles, Cal. "Hoover."
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye," "Champion," "Standard," "Ajusto."
 Champion—See Central Brass & Fixture Co.
 Champion—See Milwaukee Auto Engine & Supply Co.
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 289.)
 Clevenger Engineering & Sales Co., 86 McKinley Pl., Edgewood, N. J. "Acme."
 Clover Leaf—See Badger Mfg. Corp.
 Columbus Auto Brass Co., Columbus, O. "Howe." (See page 477.)
 Conover—See New Jersey Tube Co.
 Conqueror—See Milwaukee Auto Engine & Supply Co.
 Cox Brass Mfg. Co., Albany, N. Y. "E-Z," "Endurance." (See page 171.)
 Crescent—See Biflex Products Co.
 Davenport-Burroughs Co., 2131 Michigan Ave., Chicago, Ill. (Sole Distributors for Stafford Spring Guard Co., Chicago, Ill.)
 Diamond—See Sager Co.
 E-Z—See Cox Brass Mfg. Co.
 Endurance—See Cox Brass Mfg. Co.
 Evelyn—See Southern Specialty Co.
 Fit-All—See Sager Co.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Also Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1020.)
 Gemco Mfg. Co., 669 S. Pierce St., Milwaukee, Wis. "Willit." (See pages 172 and 173.)
 Glasgow—See Standard Safety Fender Corp.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Guardian—See Milwaukee Auto Engine & Supply Co.
 Halladay Co., L. P., Decatur, Ill. "Universal," "Simplex." (See page 171.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)
 Hoover—See Cambria Spring Co.
 Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.
 Howe—See Columbus Auto Brass Co.
 Igo Vertical Bumper Co., 149 W. Ohio St., Chicago, Ill.
 Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.
 Lyon—See Metal Stamping Co.
 McAllister Co., W. B., Cleveland, O.
 McGregor—See C. G. Spring Co.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon," "Meteco."
 Meteco—See Metal Stamping Co.
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. "Conqueror," "Champion," "Waukee," "Sterling," "Trust," "Guardian." (See page 953.)
 New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."
 New Jersey Tube Co., Newark, N. J. "Conover."
 Nichols & Wright Motor Co., 42 Parkridge Ave., Buffalo, N. Y.
 Oro—See Au-To Compressor Co.
 Presto—See Badger Mfg. Corp.
 Protex—See Badger Mfg. Corp.

Everything is listed under the NOUN or principal word

BADGER NECESSARIES

A PARTIAL list of Badger Automotive Equipment synonymous with "Trade Good Will and Dependable Service."

Bumpers: Channel and Diamond Bars, Spring Bar and De Luxe Spring Bar for the front and rear of practically any car.

Steering Wheels: 17 inch Stationary and Tilting for Ford Cars and Chevrolet "490"

"Bat-Lock" for Ford Cars.

Portable Tire Racks.

All-Steel Creepers.

Cable Tire Locks.

Running Board Luggage Carriers.

Cut-out Outfits.

Foot and Bobs Rails.

Steel Cable and Rope Tow Lines.

Foot Throttles for Ford Cars.

Write for 44-page 1921 catalog

BADGER MFG. CORP.
Milwaukee, Wisconsin

BUMPERS

Front and Rear
And In Any Style

Loop-Spring, Reenforced Diamond, Channel and Round. We specialize on bumpers and make special patterns and designs for various cars. Complete catalog sent upon request.

Cox Brass Mfg. Company

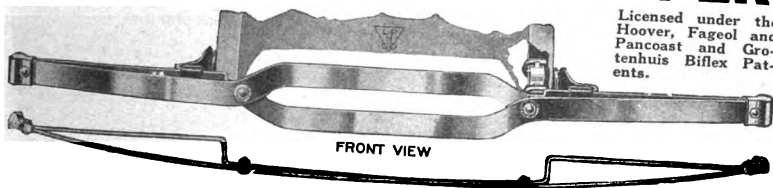
Albany, N. Y.

New York City

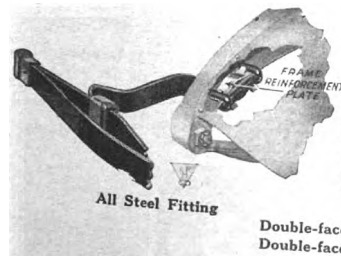
And Western Factory

5601 Carnegie Ave., Cleveland, Ohio

HALLADAY DOUBLE-FACE SPRING STEEL BUMPER



FRONT VIEW



TOP VIEW

Licensed under the Hoover, Fageol and Fancoast and Grotenhuis Biflex Patents.

Has massive appearance and exceptional strength without unnecessary weight. The flexibility and strength of the double truss spring construction affords greatest possible protection to car. Bar is handsomely finished in Black Japan with Nickel end caps and name plate bolts, or in Full Nickel, plated over a buffed copper plate base. Weight of bar, 25 lbs. Supplied complete with all-steel fittings as here shown, or with any of our regular or special fittings, front or rear.

Prices, with any style fittings:

Double-face Spring Steel Bar, 2 in. x $\frac{1}{4}$ in. Japan finish...\$17.00

Double-face Spring Steel Bar, 2 in. x $\frac{1}{4}$ in. Nickel Pl. finish 19.00

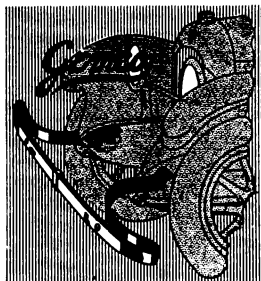
Order from your jobber, or write us, Dept. 101

Manufactured by

L. P. HALLADAY COMPANY, DECATUR, ILL., U. S. A.

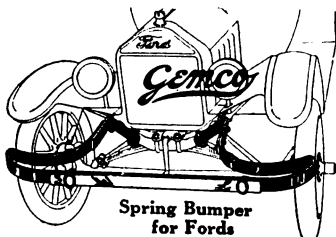
Please mention The Automobile Trade Directory

Popular Bumpers and Supplies



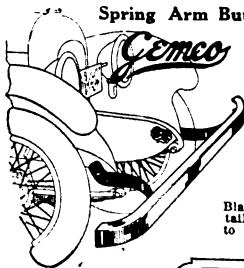
Mono-Spring Bumper

A one-piece spring bumper that may be attached to front and rear of most standard cars. Reinforcing plate of spring steel, bolted securely to the front of the bumper, increases its strength and adds greatly to its appearance. Retail prices, \$11.50 and \$13.00.



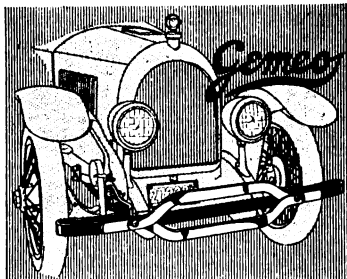
Spring Bumper for Fords

Made of one continuous strip of heavy, high-carbon, oil-tempered steel, looped at the ends, this Gemco Spring Bumper is one of the very best for Ford cars. Reinforced in front with heavy steel plate. Complete unit is substantially fastened to two spring steel clamps attached to front of car frame. Black or nickel reinforcing bar. Retail prices, \$10.00 and \$11.50. Without reinforcing bar, \$9.00.



Spring Arm Bumper

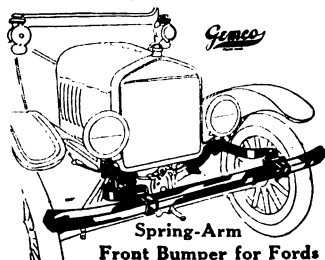
A durable, efficient bumper of pleasing appearance that fits most all cars. "S" shaped brackets are unusually strong, being made of specially heat-treated spring steel. Finished in Nickel or Black Enamel. Retail prices, \$11.30 to \$18.00.



Triple-Gard Spring Bumper

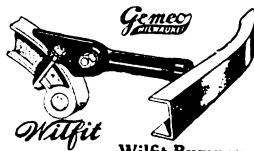
This handsome bumper offers the utmost in protection and appearance. The two protection bars—furnished in either nickel or black—are securely bolted to bumper rail. Bumper is attached to car with famous 3-way fastening—using forged hooks. Fits 90% of all cars made. Retail prices:

With Nickel Plated protection bars.....\$21.50
With Black Enamel protection bars.....19.50



Spring-Arm Front Bumper for Fords

The "S" shaped brackets of this Ford bumper, which are each made from one solid piece of tempered spring steel, absorb collision shock without damage to car frame. Bumper is attached securely to front of frame by means of two heavy dropped-forge yokes for each bracket. Bar is finished in nickel or black. Retail prices, \$11.46 to \$16.18.



Wilfit Bumper

Fits such a wide range of cars that only a limited assortment of bumpers need be carried. A strongly built, neat-looking bumper of growing popularity. Fits front or rear. Diamond or Channel Bar. Black or Nickel Finish. Retail prices, \$10.82 to \$16.28.

Gemco

MILWAUKEE

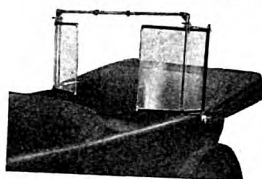
Please mention The Automobile Trade Directory

for Fords and Many Other Cars



Gemco Tri-Chek

Attached to the front of any Ford, between the leaf spring and axle, the Tri-Chek spiral spring increases riding comfort regardless of speed or road conditions. Absorbs the shock, snubs the rebound and stops side-sway. Makes steering easier, too. Retail at \$5.30.



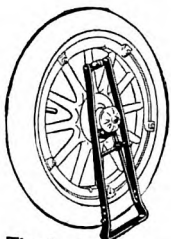
Gemco Tonn-O-Wings

These attractive-looking, practical tonneau wind-shields provide that long-sought rear-seat protection from wind and dust. Forward wings are hinged so they may be swung out of way of passengers entering or leaving the car. Beautifully made of best quality plate glass, securely set in solid frames by special Gemco method, which prevents loosening or rattling. Frames finished in black enamel with nickel plated trimmings. Tonn-O-Wings are quickly and easily attached—made to fit most cars. Retail prices, \$51.00 to \$60.00.



17-Inch Steering Wheels

For Fords and Chevrolet "490's." Beautifully finished corrugated rims of selected walnut, mounted on aluminum spider. Also made with black malleable spider in tilting and non-tilting styles. Retail prices, \$5.82 to \$7.44.



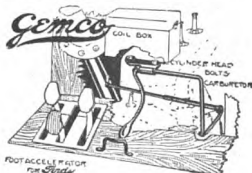
Tire Saving Jack

Takes the weight off the tires when the car is not in use. Easily placed in position. Made in 3 sizes. Fits all cars. Retail prices, \$4.20 to \$7.88.

Many new items are displayed in the 1921 Gemco Catalog, which is cross-indexed for every make of car. Send today for this valuable book. Your jobber can supply you with any of these Gemco Products.

Full-Tilt Detachable Steering Wheel

Easily tilted or completely detached. Gives 8 1/2 inches more room to enter or leave car. Protects car against theft. Corrugated 17-inch walnut rim; polished aluminum spider. Retail prices for Ford, Maxwell and Chevrolet, \$12.00. For Dodge, Overland "4" and Briscoe, \$12.50.



Foot Accelerator With Foot Rest

For Fords. Operated independently of hand control. Gives greater driving freedom. In great demand. Installed easily and quickly. Retail price, \$1.80.

GEMCO MANUFACTURING CO.

686 South Pierce Street

MILWAUKEE, WIS.



Please mention The Automobile Trade Directory

BUMPERS, Automobile (Continued)

Safety Bumper Co., 1332 56th St., Brooklyn, N. Y. "Bell."
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y. "Diamond," "Simplex," "Fit-All."
 Simplex—See Badger Mfg. Corp.
 Simplex—See Halladay Co.
 Simplex—See Sager Co.
 Southern Specialty Co., Old Colony Bldg., Chicago, Ill. "Evelyn."
 Stafford Spring Guard Co.—See Davenport-Burroughs Co.
 Standard—See Central Brass & Fixture Co.
 Standard Safety Fender Corp., 30 Boylston St., Boston, Mass. "Glasgow."
 Sterling—See Milwaukee Auto Engine & Supply Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 1063.)
 Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."
 Traffic—See Biflex Products Co.
 Truitt—See Milwaukee Auto Engine & Supply Co.
 Tyler Mfg. Co., 64-66 Pearl St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 U. S. E. Corp., 7 W. 61st St., New York, N. Y.
 United States Spring Co., 1130-36 S. Los Angeles St., Los Angeles Cal.
 Universal—See Halladay Co.
 Waukeo—See Milwaukee Auto Engine & Supply Co.
 Wayne Bumper Co., Ft. Wayne, Ind.
 Wilitt—See Gemco Mfg. Co.

BUMPERS, for Fords

(For protecting Lamps and Radiators; also for rear of car)

American Metal Parts Mfg. Co.—See Fulton Co.
 Autoguard—See Stewart-Warner Speedometer Corp.
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Better—See New Era Spring & Specialty Co.
 Blitwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 C. G. Spring Co., Kalamazoo, Mich. "McGregor." (See page 881.)
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Cox Brass Mfg. Co., Albany, N. Y. "E-Z." (See page 171.)
 Duplex Machine Co., 93 Lafayette St., Newark, N. J.
 E-Z—See Cox Brass Mfg. Co.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1020.)
 Gemco Mfg. Co., 668 S. Pierce St., Milwaukee, Wis. "Wilitt." (See pages 172 and 173.)
 Guardian—See Milwaukee Auto Engine & Supply Co.
 Halladay Co., L. P., Decatur, Ill. (See page 171.)

Hastings Mfg. Co., 38 Mill St., Hastings, Mich. (See page 573.)
 Hoover Spring Co., 301-29 Franklin St., San Francisco, Cal.
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.
 International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 521.)
 Lyon—See Metal Stamping Co.
 McGregor—See C. G. Spring Co.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon."
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. "Guardian." (See page 963.)
 New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."
 R & R Mfg. Co., 308 La Salle St., Chicago, Ill.
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
 Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 1063.)
 Wilitt—See Gemco Mfg. Co.

BUMPERS, DOOR—See Anti-Rattlers, Door

BUMPERS, REAR—See Bumpers, Automobile

BUMPERS, RUBBER SPRING—See Bumpers, Spring

BUMPERS, Spring

(Rubber or Spiral Spring Bumpers to prevent car frame from striking axle)

Accessory Supply Co., 1218-20 E. 12th St., Kansas City, Mo. "Hickory."
 American Chain Co., Bridgeport, Conn. "Twinbar." (See page 548.)
 American Rubber & Tire Co., 100 Beech St., Akron, O.
 Booth—See Lansing Auto Bumper Co.
 Boston Belting Co., 84 Linden Park St., Boston, Mass.
 Bridge Web Tire Co., 3963 Prairie Ave., Chicago, Ill.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 531.)
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa.
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Frazier & Co., W. S., Aurora, Ill.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O. (See page 963.)
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Hickory—See Accessory Supply Co.

Everything is listed under the NOUN or principal word

BIFLEX

TRADE MARK

The Biflex Spring Bumper halts all single bar bumpers from passing. Its twin bars spaced high and low will not let them pass over or under it to inflict damages or to interlock. Single bar bumpers are placed at various heights from the ground and their chances of meeting each other and stopping are very remote. The first bumper to block and ward off all others is the Biflex.

STANDARD BIFLEX BUMPERS

For Motor Cars weighing 3,000 lbs. and over:	
MODELS	FRONT
Traffic—full black enamel.....	\$26.00
Crescent—upper bar nickel.....	\$7.00
Boulevard—full front nickel.....	\$2.00
(Prices west of Rocky Mountains, \$32.00, \$39.00, \$50.00 respectively.)	

REAR
\$26.00
\$7.00
\$2.00

JUNIOR BIFLEX SPRING BUMPERS

For Motor Cars weighing 2,500 lbs. and under:	
MODELS	FRONT
Traffic—full black enamel.....	\$21.00
Crescent—upper bar nickel.....	\$2.00
Boulevard—full front nickel.....	\$2.00
(Prices west of Rocky Mountains, \$23.00, \$31.00, \$25.00 respectively.)	

REAR
\$21.00
\$2.00
\$2.00

BIFLEX PRODUCTS COMPANY

Prices subject to change without notice.

Prices f. o. b. factory.

WAUKEGAN, ILL.

ECONOMY

HOIST & BODY COMPANY INC.

Steel Dump and Express Bodies
Equipped With Worm and
Gear Hand Hoist

Made in Three Capacities

35 cubic feet

54 cubic feet

Designed to fit Ford, Reo, Maxwell,
G. M. C., Republic, Duplex, Com-
merce and all trucks up to 2 ton.

Two Bodies in One for the
Price of One

ECONOMY

HOIST & BODY COMPANY INC.

405 Lexington Avenue, New York City

FINANCE

Your Time Sales

Our new TERRITORY charts supply
the first equitable plan for financing
Motor Car Time Sales.

Nothing Like It Ever Offered
Before

Our rates are governed by the cost of
insurance on the different cars in the
different sections of the country and
are, therefore, fair and equitable.

One Flat Charge for Everything
including interest, and insurance in a
company having over \$30,000,000,
capital and surplus, and represented
locally in every State.

COMMERCIAL CREDIT CO.

Cash Capital and Surplus, \$4,200,000
BALTIMORE

Represented in the Principal Cities



BALL THRUST



JOURNAL ROLLER

BALL & ROLLER BEARINGS

One Bearing or
One Thousand



ANNULAR



ROLLER THRUST

Sole Licensed Manufacturer for the U. S. of The
BOWDEN PATENT WIRE MECHANISM

THE GWILLIAM COMPANY

NEW YORK

253 West 59th St.

PHILADELPHIA

1214 Arch St.

BROOKLYN

23 Flatbush Ave.

Please mention The Automobile Trade Directory

BUMPERS, Spring (Continued)

- Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 Lansing Auto Bumper Co., Lansing, Mich. "Booth."
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Thermold Rubber Co., Trenton, N. J. (See page 551.)
 Twinbar—See American Chain Co.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

BURLAP, Importers of

- American Bag Co., Memphis, Tenn.
 Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.
 Bemis-Indianapolis Bag Co., Indianapolis, Ind.
 Central Bag Mfg. Co., 3622-30 Iron St., Chicago, Ill.
 Cleveland-Akron Bag Co., Cleveland, O. (See page 97.)
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 1049.)
 Milwaukee Bag Co., 206-20 S. Water St., Milwaukee, Wis.
 Riegel Sack Co., Woolworth Bldg., New York, N. Y.

BURNER CLEANERS—See Cleaners, Acetylene Burner

BURNERS, Acetylene Lamp

- Alco—See American Lava Burner Co.
 American Lava Burner Co., 27 William St., Chattanooga, Tenn. "Alco."
 Brilliant—See Monosmith Bros. Co.
 Carroll, J. B., 3057 Carroll Ave., Chicago, Ill. "Hahn."
 Colonial Mfg. Co., 711-13 E. Main St., Chattanooga, Tenn.
 Crescent—See Kirchberger & Co.
 Hahn—See Carroll, J. B.
 Imperial—See Kirchberger & Co.
 Kirchberger & Co., M., 14th Ave. & 37th St., New York, N. Y. "Crescent," "Perfection," "Koro," "Victory," "Stalit," "Standard American," "Imperial," "New Yankee."
 Koro—See Kirchberger & Co.
 Monosmith Bros. Co., 500 S. Main St., Spencer, O. "Brilliant."
 New Yankee—See Kirchberger & Co.
 Novelty Burner Co., Chattanooga, Tenn. "Queen Eta."
 Perfection—See Kirchberger & Co.
 Queen Eta—See Novelty Burner Co.
 Stalit—See Kirchberger & Co.

Standard American—See Kirchberger & Co.
 Tennessee Burner Mfg. Co. (East Lake), Chattanooga, Tenn. "X-L."
 Victory—See Kirchberger & Co.
 X-L—See Tennessee Burner Mfg. Co.

BURNERS, Gasoline and Kerosene

(For Steam Boilers)

Simmons, H. C., North Burlington, Vt.

BURNERS, LAMP—See Burners, Acetylene Lamp

BURNERS, Lead

- Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
 Hauck Mfg. Co., 124-24 Tenth St., Brooklyn, N. Y.
 Henderson-Willis Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
 Hoke-Shontz—See Shontz Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.
 Rego—See Bastian-Blessing Co.
 Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. "Hoke-Shontz." (See page 177.)
 Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.
 Turner Brass Works, Sycamore, Ill. (See page 177.)
 United States Welding Co., 120 N. First St., Minneapolis, Minn.

BURNING-IN MACHINES—See Machines, Burning-in

BURNING MACHINES, LEAD—See Machines, Lead Burning

BUSHING EXTRACTORS FOR FORDS—See Extractors, Bushing

BUSHING PULLERS FOR FORDS—See Extractors, Bushing

BUSHING REMOVERS FOR FORDS—See Extractors, Bushing

BUSHING SWEDGING PRESSES—See Presses, Bushing Swedging

BUSHINGS, BABBITT-LINED BRONZE-BACKED—See Bearings and Bushings

BUSHINGS, Bronze and Die Cast

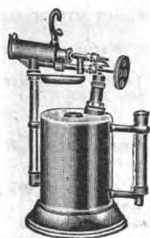
(For Corod Bushing Bars—See Metals, Bearing; For Die Cast Bearings—See Castings, Die; For Bushing Metals—See Metals, Bearing; For Bronze-backed Babbitt-lined Bearings and Bushings—See Bearings and Bushings, Babbitt-lined, Bronze-backed. Also for Bushings for Fords—See Bushings, Bronze, for Fords)

Alloy Foundry & Machine Corp., New Rochelle, N. Y.

Everything is listed under the NOUN or principal word

TURNER TORCHES

(GASOLINE-KEROSENE)

**"DOUBLE-JET"**

You want torches that will do your work cleanly and quickly, without balking, sputtering and going out. TURNER NEW LINE BLOW TORCHES will do the trick. THE BAFFLE DOES IT.

Don't buy another Blow Torch without the baffle in the burner tube. TURNER PATENT.

Adjusting needle is separate from the shut-off. Tell your jobber you want a TURNER NEW LINE BLOW TORCH.

"HOT BLAST"

The Turner Brass Works, Sycamore, Illinois

Fifty Years of Manufacturing Experience.

NEW CATALOGUE of Battery and Electrical Service Station Equipment

This is the most complete Catalogue ever issued devoted exclusively to this equipment.

Contains illustrations and complete descriptions of over 300 articles all guaranteed to give satisfactory service.

This Catalogue is a revelation to battery and electrical men as to the time and labor saving tools and equipment.

Free on request. Send for it.

H. B. SHONTZ CO., Inc.

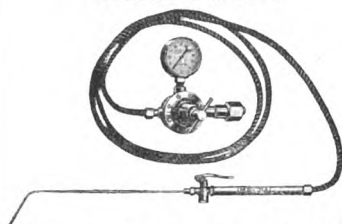
161 W. 64th St., New York City

Department C.

IMPERIAL

Carbon Burning Outfits

OXYGEN PROCESS



No. 6—Carbon Burning Outfit—Price \$15.00

A Big Money Maker

Every garage should have one of these outfits. Your jobber can supply you promptly

IMPERIAL PRODUCTS include Welding, Cutting and Lead Burning Equipment, Auto Accessories, etc.

The Imperial Brass Mfg. Co.

1234 W. Harrison St., Chicago

BRASS AND BRONZE BUSHINGS for Automobile Parts

Accurately machined to meet your exact requirements. Send us your blueprints and specifications. You'll be surprised at our reasonable charges for the superior service and quality materials that combine to make our Brass and Bronze Bushings the best obtainable.

The REGAR BRASS MFG. COMPANY

Brass and Bronze Founders and Finishers

Cleveland, Ohio

Please mention The Automobile Trade Directory

BUSHINGS, Bronze and Die Cast (Continued)

Aluminum Manufacturers, Inc., 5205 Carnegie Ave., Cleveland, O. "Lynux."
 American Bronze Corp., Berwyn, Pa. (See page opposite Inside Front Cover.)
 Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 179.)
 Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
 City Brass Foundry Co., 5518 St. Clair Ave., N. E., Cleveland, O.
 Cleveland Graphite-Bronze Co., Cleveland, O. (See page 391.)
 Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
 Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 208.)
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Detroit Motor Castings Co., 399-308 Beaufait Ave., Detroit, Mich.
 Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 231.)
 Federal Bearing & Bushing Corp., Detroit, Mich. (See page 861.)
 Federal Parts Mfg. Co., 15 Second St. S. E., Minneapolis, Minn.
 Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
 G. & R. Foundry & Machine Co., 6½ St. & Penn. R. Co., Terre Haute, Ind.
 Gallagher's Sons, James, 87 Centre St., New York, N. Y.
 Garfield Mfg. Co., Garfield, N. J.
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representative for Johnson Bushings.) (See page 853.)
 Johnson Bronze Co., New Castle, Pa. (See page 181.)
 Joppa Machine Co., 1537 N. Fawn St., Philadelphia, Pa.
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Limerick Co., J. Arthur, 900 N. Howard St., Baltimore, Md.
 Lynux—See Aluminum Manufacturers, Inc.
 Marquette Metal Products Co., 5545 Carnegie Ave., Cleveland, O.
 Mill Co., D. B., Westside Ave., Jersey City, N. J.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 211.)
 Moccasin Bushing Co., Boyce & 30th Sts., Chattanooga, Tenn.
 Mussy-Lyon Co., Detroit, Mich. (See page 108.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Progressive Sheet Metal Co., 1976-34 Central Ave., Cincinnati, O.
 Regar Brass Mfg. Co., Cleveland, O. (See page 177.)
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
 Sherwood Brass Works, 6321 E. Jefferson Ave., Detroit, Mich.
 Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
 Standard Brass Foundry Co., 990 E. 17th St., Cleveland, O.
 Sterling Specialty Co., New Comertown, O.
 Superior Brass Works, 250 Brush St., Detroit, Mich.
 Thiery & Kendrick Mfg. Co., Detroit, Mich. (See page 221.)
 Twentieth Century Brass Works, 516 Fifth Ave., S., Minneapolis, Minn.
 United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.

U. S. Hammered Piston Ring Co., 1306 E. Grove St., Irvington, N. J.
 Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
 Wagner Mfg. Co., E. M., North Milwaukee, Wis. (See page 895.)
 Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 671.)

BUSHINGS, Bronze and Die Cast, for Fords

Armand Machine Works, 442-50 E. Wells St., Chicago, Ill. (See page 371.)
 Ban-Rov & Co., 2220 S. Wood St., Chicago, Ill.
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, O.
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Dunham Co., Thos., Aurora, Ill. (See page 163.)
 Eckhouse & Co., Walter, 610-23 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)
 Edelmann & Co., E., 1688 N. Crawford Ave., Chicago, Ill.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 553.)
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Johnson Bronze Co., New Castle, Pa. (See page 181.)
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Martin & Anson, 2226-23 Indiana Ave., Chicago, Ill.
 Metal Stamping Co., 12th St. & East Ave., Long Island City, N. Y.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
 Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
 U. S. Metal Goods Co., 3311 Euclid Ave., Cleveland, O. (See page 745.)
 Vulcan Die Casting Corp., 1126-1136 W. Belden Ave., Syracuse, N. Y. (See page 389.)
 Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.
 Waterbury Mfg. Co., 286 Grand St., Waterbury, Conn.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Zagora Mfg. Co., J., 1209 S. Mint St., Charlotte, N. C.

BUSHINGS, CORK—See Washers, Cork

BUSHINGS, DIE CAST—See Bushings, Bronze

BUSHINGS, Drilling and Reaming

Bard Mfg. Co., Royersford, Pa. (See page 709.)

BUSHINGS, GRAPHITE—See Bearings, Oil-less

Everything is listed under the NOUN or principal word



Have you grasped the significance of Bunting's "In Stock" Straight Dimension Bronze Bushing line?

There are 143 different sizes of these completely finished bronze bushings always in stock, at the factory and all branches. Small lots at quantity prices. Buy them as you need them. Get them when you want them.



Write for Stock List "C"

THE BUNTING BRASS & BRONZE COMPANY

737 Spencer Street,

TOLEDO, OHIO

NEW YORK CITY
Grand Central Palace
Vanderlip 7300

CHICAGO
722 S. Michigan Ave.
Wabash 9153

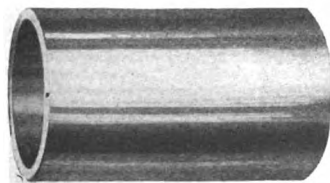
CLEVELAND
1382 E. 6th St.
Bell—Main 5891

SAN FRANCISCO
189 Second St.
(Corner Howard)

Bronze Bushings and Bearings
(Patented)

Babbitt-lined Bearings

Cored and Solid Bars



Please mention The Automobile Trade Directory

BUSHINGS, OILLESS—See Bearings, Oilless

BUSHINGS, Spark Plug Testing

(Steel bushing or shell threaded at one end to fit spark plug opening at the other to receive the plug and containing a glass cylinder through which the operation of the plug may be observed)

Asch and Co., Inc., 18-24 W. 61st St., New York, N. Y. (Eastern Distributors for Detroit Bushings.) (See page 243.)
Detroit Accessories Corp., 3629 Gratiot Ave., Detroit, Mich.

BUSHINGS, Starter or Primer Attaching

(For use on motors not equipped with pet cooke)

A. & G. Mfg. Co., West Newton, Mass.
Stryker, C. W., 340 Shonnard St., Syracuse, N. Y.

BUTTON MACHINES—See Machines, Upholstery Button

BUTTONS, HORN—See Buttons, Push

BUTTONS, Push

(Special Push Buttons for use with Electric Horns. See also Horns, Electric)

Beaver Machine & Tool Co., 625-48 N. Third St., Newark, N. J.
Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. "Push-Well," "Tip Top."
(See pages 181 and 529.)
Caskey-Dupree Mfg. Co., Marietta, O. "Handy."
General Phone Mfg. Co., Elyria, O.
(See page 189.)
Handy—See Caskey-Dupree Mfg. Co.
Handy Products Co., Erie Bldg., Cleveland, O.
J-F—See Jones-Fisher Co.
Jones-Fisher Co., 20 E. Broad St., Columbus, O. "J-F."
Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.
Pushwell—See Benjamin Electric Mfg. Co.
Rosco—See Rosen & Co.
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
(See page 313.)
Tip Top—See Benjamin Electric Mfg. Co.

BUTTONS, Special Horn, for Fords

(Designed to get horn control in a more accessible position by attaching to steering wheel column, etc.)

Aerofram Co., 107 Massachusetts Ave., Boston, Mass. "Nu-Way."
Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Bulz-Nut Mfg. Co., Sunny Slope Station, Kansas City, Mo.
Handy Products Co., Erie Bldg., Cleveland, O.
Nu-Way—See Aerofram Co.

BUTTONS, Upholstery

Atlas Tack Corp., Fairhaven, Mass.
Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
Auveco—See Auto-Vehicle Parts Co.
Lauders Bros. Co., Dept. A2, Toledo, O.
(See page 1049.)

Lounsbury & Sons, G. H., 107-09 W. Third St., Cincinnati, O.

Milonite—See Morley Button Mfg. Co.

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O.
(See page 399.)

Morley Button Mfg. Co., 120 Boylston St., Boston, Mass. "Milonite."

Nelder Co., F. A., Augusta, Ky.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Tockwotton Co., 79 S. Main St., Providence, R. I.

United Button Co., Union St., Easthampton, Mass.

White Co., L. C., 314 Bank St., Waterbury, Conn.

CABINET LOCKS—See Locks, Cabinet and Pad

CABINETS, Accessory

(See also Cases, Bolt and Screw)

Heller & Co., W. C., Wabash Ave., Montpelier, O.

Miller Brothers, Lewisburg, Pa.
(See page 187.)

Stevens & Co., 375 Broadway, New York, N. Y. (Distributors.) (See page 201.)

CABINETS, BOLT AND SCREW—See Cases, Bolt and Screw

CABINETS, FIRST AID—See Cases, Medical Emergency

CABINETS, GREASE—See Guns, Portable Garage Grease

CABLE, Flexible Control

Bowden—See Gwilliam Co.
Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. "Bowden." (Dealer.)
(See page 175.)

CABLE, IGNITION—See Wire, Insulated

CABLE, WIRE—See Rope, Bronze Wire; also Rope or Cable, Steel Wire

CABS, Metal Truck

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.
Anthony Co., Streator, Ill. (See page 127.)
Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
Continental Trailer Corp., 3625 Superior St., Detroit, Mich.
Field Body Corp., Owosso, Mich.
(See page 129.)
Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
Hummell Mfg. Co., 3014 LaSalle St., St. Louis, Mo. (See page 493.)
Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
Sheet Steel Products Co., Michigan City, Ind. (See page 187.)
Spaulding Mfg. Co., 933 Spring St., Grinnell, Iowa.

Everything is listed under the NOUN or principal word

All
JOHNSON

"The Reputation Behind the Name"

When you specify JOHNSON Bronze Bushings you are not merely buying metal. With every Johnson Bushing you receive the full benefit and experience of our twenty years of specialization in the manufacture of BETTER Bronze Bushings for every purpose.

**Johnson Reliability—
Johnson Wear Resistance—
Johnson Satisfaction—**

these are the three factors responsible for the "reputation behind the name."

Write us about your Bushing requirements.

Johnson Bronze Co.
New Castle,
Pa.



BENJAMIN

Buttons are made in a variety of styles and mountings to care for all requirements. Flush-type style may be used also for door-bells and call systems, as well as for automobiles.

The several types shown for spark-advance levers are used by the prominent steering-column manufacturers as standard equipment.

BENJAMIN PRODUCTS

also include an extensive line of automobile and motorcycle horns, as well as garage lighting equipment and industrial signals.

Write for our descriptive booklet.

BENJAMIN ELECTRIC MFG. CO.
CHICAGO
NEW YORK SAN FRANCISCO



8106 C
Steering-Wheel Mounting



8106 B
Fore-Door Mounting



8120 A
Split-Type Lever Mounting



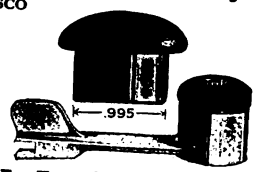
8124 A
Steering-Column Mounting



8152 H
For Light Steering Columns



8180 F
Surface Mounting



8195
For Heavy Steering Columns

Please mention The Automobile Trade Directory

CABS, Metal Truck (Continued)

Stewart Iron Works Co., Cincinnati, O.
Western Metal Specialty Co., Milwaukee, Wis. (See page 687.)

CABS, Wood Truck

A. B. C.—See Clippinger & Sons Mfg. Co.
Abingdon Wagon Co., Abingdon, Ill.
Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.
Auto Products Co., Station H, Cincinnati, O. (See page 159.)
Automotive Manufacturers' Association, 14th & Farnam Sts., Omaha, Nebr. (Sales Representatives for Badger Auto Body Co., Milwaukee, Wis.)
Babcock Co., H. H., Watertown, N. Y. (See page 129.)
Badger Auto Body Co.—See Automotive Manufacturers' Association.
Badger Mfg. Co., Eighth & M Sts., Lincoln, Neb. "Havlock."
Clark Mfg. Co., J. L., Oshkosh, Wis.
Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A. B. C."
Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. (See page 141.)
Defiance Carriage Co., Perry & Gorman Sts., Defiance, O.
Detroit Weatherproof Body Co., Corunna, Mich.
Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
Express Body Corp., 332 S. Michigan Ave., Chicago, Ill.
Fitz John-Erwin Mfg. Co., Muskegon, Mich.
General Woodwork Co., 1226-35 Budd St., Cincinnati, O.
Graves Co., L. C., Springboro, Pa.
H. & M. Body Corp., 608 Center St., Racine, Wis.
Hall Air Lock & Railway Supply Co., Oakville, Iowa.
Hummell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for General Woodwork Cabs.) (See page 493.)
Kennedy Cab & Body Co., Lewis Bldg., Minneapolis, Minn.
Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.
Lansing Body Co., 504 No. Grand Ave., Lansing, Mich.
Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
Miscampbell Body Co., H., 306 S. First Ave., E., Duluth, Minn. "Richeson's 3-in-1."
Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
Proctor-Keefe Co., 7741 Dix Ave., Detroit, Mich.
Randall—See Sunflower Body Works.
Richeson's 3-in-1—See Miscampbell Body Co.
Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
Southern Motor Mfg. Association, Beatty Bldg., Houston, Tex.
Standard Body Co., 934 Lowe St., Appleton, Wis.
Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.
Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.
Sunflower Body Works, Topeka, Kans. "Randall."

Walker & Werner, 207-12 Fayette St., Peoria, Ill.

CAGE REMOVING TOOLS—See Tools, Valve Cage Removing

CALCIUM CARBIDE—See Carbide, Calcium.

CALIPERS and DIVIDERS

(For Micrometer Calipers—See Micrometers)

A. M. C.—See Athol Machine Co.
Athol Machine Co., Athol, Mass. "Premier," "A. M. C."
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Columbia—See Smith, E. G.
Consolidated Tool Works, 261 Broadway, New York, N. Y. "Pilot."
Copelands—See Eagan, Thos. F.
Eagan, Thos. F., 8 Blithwood Ave., Worcester, Mass. "Copelands."
Fay—See Starrett Co.
Goodell-Pratt Co., Greenfield, Mass.
Melges-Powell Co., 523 16th Ave., Milwaukee, Wis.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Pilot—See Consolidated Tool Works.
Premier—See Athol Machine Co.
Smith, E. G., 315 W. Park Ave., Tampa, Fla. "Columbia."
Starrett Co., L. S., Athol, Mass. "Fay," "Yankee."
Union Tool Co., 48 E. River St., Orange, Mass.
Yankee—See Starrett Co.

CAM CUTTING MACHINES — See Machines, Cam Cutting

CAMSHAFT ALIGNING JIGS—See Reamers and Jigs, Camshaft Aligning for Fords

CAMSHAFT ALIGNING REAMERS—See Reamers and Jigs, Camshaft Aligning for Fords

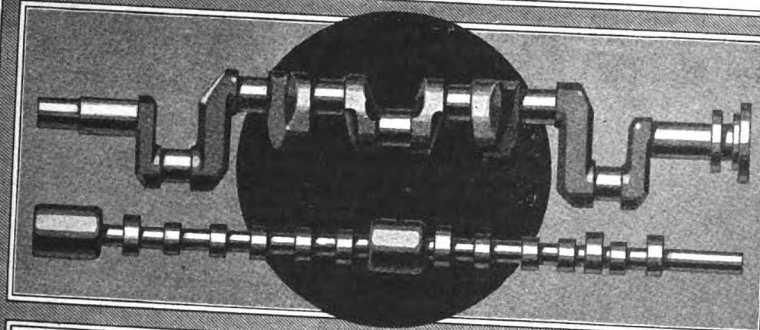
CAM-SHAFT BEARING PARTING TOOLS FOR FORDS—See Tools, Cam-Shaft Bearing Parting

CAM-SHAFTS, Finished or Machined

(For Cam-Shafts in the rough—See Forgings, Drop)

Accuratime—See Muskegon Motor Specialties Co.
Cleveland Camshaft Co., 5520 Carnegie Ave., Cleveland, O.
Commercial Machine Co., 31-33 W. Front St., Dunkirk, N. Y.
Gordon Mfg. Co., L. O., Muskegon, Mich. (See page 189.)
Jackson Motor Shaft Co., Jackson, Mich. (See page 183.)
Muskegon Motor Specialties Co., Muskegon, Mich. "Accuratime." (See page 185.)
Union Switch & Signal Co., Swisvale, Pa.
Universal Parts Co., 325 Mt. Vernon Ave., Columbus, O.
Wyman-Gordon, Worcester, Mass. (See Back Bone.)

Everything is listed under the NOUN or principal word



The Largest Manufacturer Finishing Both Crankshafts And Camshafts Exclusively

If you require finished crankshafts and camshafts in large quantities with dependable and consistent shipments, know we can be of service to you.

Our facilities and experience are the reason, and will welcome a visit from you that we may prove this.



The JACKSON MOTOR SHAFT COMPANY
JACKSON MICHIGAN

Please mention The Automobile Trade Directory

CAM-SHAFTS, Special, for Fords

Green Engineering Co., Main St. & Burns Ave.,
Dayton, O.
Noonan Mfg. Co., D. R., Paris, Ill.

CAMERAS, Aircraft

Anseo Co., Washington St., Binghamton, N. Y.
Bausch & Lomb Optical Co., St. Paul & Smith
Sts., Rochester, N. Y.
Eastman Kodak Co., Rochester, N. Y.
Fairchild Aerial Camera Corp., 17 W. 43d St.,
New York, N. Y.
G. E. M. Engine Co., 1216 Walnut St., Phila-
delphia, Pa.
Herbert & Heusen Co., 13 E. 43d St., New
York, N. Y.

CAMP OUTFITS—See Hampers; also
Stoves, Camp; also Tents

CAMP STOVES—See Stoves, Camp

CAN HOLDERS—See Holders or Tippers,
Oil Can

CAN TIPPERS—See Holders or Tippers,
Oil Can

CANOPIES, Tractor

Hughes & Curren Co., 45 Halstead St.,
(Brighton Sta.), Rochester, N. Y. "Moto-
line."
Moore Mfg. Co., Concrete & Water Sts.,
Waterloo, Iowa.
Motoline—See Hughes & Curren Co.
Otwell Tractor Equipment Co., 1538 Livernois
Ave., Detroit, Mich.
Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.
Weis Mfg. Co., Henry, Atchison, Kans. "Weis-
teel."
Weisteel—See Weis Mfg. Co.

CANS, Gasoline

(For Garage Use)

American Can Co., 120 Broadway, New York,
N. Y. "Canco."
Atlantic Stamping Co., 180 Ames St., Roches-
ter, N. Y.
Boyle Mfg. Co., Los Angeles, Cal.
(See page 189.)
Canco—See American Can Co.
Central Stamping Co., 173-74 Fulton St., New
York, N. Y.
Delphos Mfg. Co., 100-24 S. Pierce St., Del-
phos, O.
Diener Mfg. Co., Geo. W., 400-20 Monticello
Ave., Chicago, Ill. "Protection."
Dover Stamping & Mfg. Co., 385 Putnam
Ave., Cambridge, Mass. (See page 421.)
Justite Mfg. Co., 2061-81 Southport Ave.,
Chicago, Ill.
Kompact—See Vogel & Bros.
McNutt Can Sales Co., 83 Chambers St., New
York, N. Y.
National Enamelling & Stamping Co., 413 Fifth
Ave., New York, N. Y.
Non-Explosive Can & Tube Co., 127-29 S.
Green St., Chicago, Ill.
Protection—See Diener Mfg. Co.

Sexton Can Co., 123 Broad St., Boston, Mass.
Vogel & Bros., William, 37 S. Ninth St.,
Brooklyn, N. Y. "Kompact."

CANS, Oiling

(For Oil Guns—See Guns, Oil)

All-Way—See Famasco Distributing Co.
Ansonia Novelty Co., Ansonia, Conn. "Rich-
ard."
Automotive Exchange of America, Hippo-
drome Annex, Cleveland, O. "Ducky."
Beacon—See Mooers-Wright Co.
Brown Stamping Co., Toledo, O.
Buko Oiler Mfg. Co., Clarkson, Nebr. "Sure-
Shot."
Cannon Oiler Co., Keithsburg, Ill.
Delphos Mfg. Co., 100-24 S. Pierce St., Del-
phos, O.
Dover Stamping & Mfg. Co., 385 Putnam
Ave., Cambridge, Mass. (See page 421.)
Ducky—See Automotive Exchange of Amer-
ica Co.
Eagle Mfg. Co., Wellsburg, W. Va.
Famasco Distributing Co., 694 Main St.,
Buffalo, N. Y. (Sole Distributors for U.
S. All-Way Oiler Co., Waterbury, Conn.
"All-Way.") (See page 421.)
Gem Mfg. Co., Goebel & Fulton Sts., Pitts-
burgh, Pa.
Hero Mfg. Co., 23rd & Westmoreland Sts.,
Philadelphia, Pa.
Howland—See Maple City Stamping Co.
Kompact—See Vogel & Bros.
Lidseen, Gustave, 832-40 S. Central Ave., Chi-
cago, Ill.
Maple City Stamping Co., 710 Park Ave.,
Peoria, Ill. "Howland."
Metal Products Mfg. Co., 121-29 Fifth Ave. S.,
Minneapolis, Minn. "Theim."
Mooers-Wright Co., 1400 Broadway, New
York, N. Y. "Beacon." (See page 187.)
Noera Mfg. Co., 21-27 Griggs St., Waterbury,
Conn.
Richard—See Ansonia Novelty Co.
Sure-Shot—See Buko Oiler Mfg. Co.
Thiem—See Metal Products Mfg. Co.
U. S. All-Way Oiler Co.—See Famasco Dis-
tributing Co.
Vogel & Bros., William, 37 S. Ninth St.,
Brooklyn, N. Y. "Kompact."
Wall Mfg. Supply Co., P., 720 Preble Ave.,
Pittsburgh, Pa.
Walters Mfg. Co., Fulton Bldg., Pittsburgh,
Pa.

CANS, Waste

(Receptacles for oily and dirty waste)

Acme Sheet Metal & Mfg. Co., 2243 Lakeside
Ave., Cleveland, O.
Angle Steel Stool Co., Otsego, Mich.
Atlantic Stamping Co., 180 Ames St., Roches-
ter, N. Y.
Boyle Mfg. Co., Los Angeles, Cal.
(See page 189.)
Central Stamping Co., 173-74 Fulton St., New
York, N. Y.
Cleveland Wire Spring Co., 1281 E. 38th St.,
Cleveland, O.
Delphos Mfg. Co., 100-24 S. Pierce St., Del-
phos, O.
Diamond State Fibre Co., Bridgeport, Pa.
Diener Mfg. Co., Geo. W., 400-20 Monticello
Ave., Chicago, Ill. "Protection."

Everything is listed under the NOUN or principal word



Accurate

INTEGRAL CAM SHAFTS

The Result of Intensive Specialization.

WE are equipped to build any type of integral cam shaft; from the one cylinder shafts with single inlet and exhaust cam to the twelve cylinder "V" type with twenty-four cams; lengths ranging from 4 to 72 inches.

NUMBER OF CYLINDERS					
1 Cyl.	2 Cyl.	4 Cyl.	6 Cyl.	8 Cyl.	12 Cyl.
Farm Lighting Equipment.	Tractor	Passenger	Passenger	Passenger both	"V" type for Passenger
Stationary	Marine	Truck	Marine	"V" type and Straight	Aircraft
Heavy Duty Marine		Tractor	Aircraft	Marine	Marine
		Marine		Aircraft	

The cam contours may be made in practically any shape suited to any kind of tappet, either roller, flatfoot, mushroom or shoe.

For the purpose of oiling and weight reduction, a hole is often required running the entire length of shaft and these holes may vary $\frac{1}{2}$ " to 1" diameter.

In addition to ordinary lathe and grinding operations of the perfectly plain cam shaft, any one, or a combination of the following, may be incorporated on the shaft:

Eccentrics
Reamed Holes
Tapped Holes

Keyways
Threads

Splines
Helical Gears
Oil Grooves

Cross Holes
Flanges
Thrust Collars

Muskegon Motor Specialties Company

Detroit Office
80 Washington Blvd.
Telephone, Cherrv 5967

Muskegon, Michigan

Chicago Office
14 E. Jackson Blvd.
Telephone, Harrison 5957

By Reputation — "The Best Cam Shafts Made"

Please mention The Automobile Trade Directory

CANS, Waste (Continued)

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 421.)
 Durlach Can & Iron Works, 324 Bridge St., Brooklyn, N. Y.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
 Koven & Bro., L. O. Jersey City, N. J.
 Kraft, A. C., 323-25 W. Lake St., Chicago, Ill. "Nacefas."
 McNutt Can Sales Co., 83 Chambers St., New York, N. Y.
 Nacefas—See Kraft, A. C.
 Protection—See Diener Mfg. Co.
 Sexton Can Co., 138 Broad St., Boston, Mass.
 Solar Metal Products Co., 470 E. Starr Ave., Columbus, O.
 Vogel & Bros., William, 37 S. Ninth St., Brooklyn, N. Y.
 Wall Mfg. Supply Co., P., 730 Preble Ave., Pittsburgh, Pa.
 Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

CANTILEVER SPRING SUPPORT CLAMPS—See Clamps, Special Cantilever Spring Support**CANVAS BUCKETS—See Buckets, Collapsible****CANVAS SHIPPING COVERS—See Covers, Paper and Canvas Shipping****CAP LOCKS, RADIATOR—See Locks, Radiator Cap and Thermometer****CAP SCREWS—See Screws, Cap****CAPE CHISELS—See Chisels, Cold and Cape****CAPE TOPS—See Tops, Automobile****CAPS, BRASS RADIATOR—See Caps, Brass Radiator and Tank****CAPS, COMPOSITION RADIATOR—See Caps, Rubber or Composition Radiator****CAPS, GASOLINE TANK—See Caps, Brass Radiator and Tank****CAPS, Gasoline Tank, for Fords***(Including both standard and special caps)*

Freeman Brass Works, 92 Bowery, New York, N. Y.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

CAPS, GASOLINE TANK FILLER—See Caps, Brass Radiator and Tank; also Caps, Rubber or Composition Radiator**CAPS, Hub***(Pressed or Stamped Caps; for Cast Caps—See Castings)*

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowish, Wis.

American Brass Co., Waterbury, Conn. (See page 165.)

Basick Co., Bridgeport, Conn. (See page 323.)

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 895.)

Bessert Corp., Utica, N. Y. (See page 887.)

Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)

Buffalo Pressed Steel Co., Buffalo, N. Y.

Crosby Co., Buffalo, N. Y. (See page 893.)

Kelsey Wheel Co., Detroit, Mich. (See page 1061.)

Konigslow Mfg. Co., Otto E., 5501 Perkins Ave., Cleveland, O.

Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.

Maryland Metal Products Co., Hagerstown, Md.

Matthews Mfg. Co., H. A., Seymour, Conn.

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

Pfau Mfg. Co., Cincinnati, O.

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 889.)

Sterling Sales Co., Auburn, Ind. "Sterlite."

Sterlite—See Sterling Sales Co.

Torrey Roller Bushing Works, Bath, Me.

Waterbury Mfg. Co., 216 Grand St., Waterbury, Conn.

Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

Worcester Stamped Metal Co., Worcester, Mass. (See page 1051.)

CAPS, Hub, for Fords*(Including both standard and special caps)*

A-K—See Angsten-Kox Co.

Angsten-Kox Co., 221-23 W. Randolph St., Michigan City, Ind. "A-K." (See page 537.)

Becco—See Michigan Motor Specialties Co.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)

Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Empress—See Bowen Products Corp.

Freeman Brass Works, 92 Bowery, New York, N. Y.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)

Hyman & Co., Henry, 476 Broadway, New York, N. Y.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Michigan Auto Products Co., 3008 Grand River Ave., Detroit, Mich.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill. (See page 83.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Ospeco—See Michigan Auto Products Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Sterling."

Sterling Sales Co., Auburn, Ind. "Sterlite."

Sterlite—See Sterling Sales Co.

Sterling—See Republic Auto Parts Co.

Everything is listed under the NOUN or principal word



MOOERS - WRIGHT CO.

THE BEACON LINE

1490 Broadway
NEW YORK

Flexible and Standard Spout
Oilers
Filling Cans
Funnels
Measures

Sole Distributors of

Union Red Roll Auto Waste
A compact and convenient one lb. package

RAILROADS have found through exhaustive tests that the all steel coach represents the ultimate design in railroad cars.

Motor truck operation is more severe than railroad service. Why not standardize on cab equipment which you know is equal to these demands? You can meet the problem with Steel Cabs.

SPECIFY—

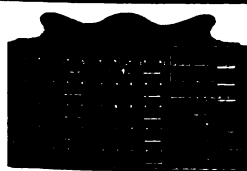
Sheet Steel Products Cabs

Built in standard or special designs, shipped assembled or in sections. Let our engineers help you.

SHEET STEEL PRODUCTS COMPANY

Michigan City

Indiana



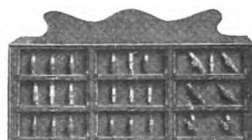
The Miller Electric Bulb, Fuse and Brush Cabinet. Price \$15.00, F.O.B.

THE SILENT SALESMEN

Dealers' twin necessities. They keep a complete stock of Spark Plugs, Bulbs, etc., instantly available and always conspicuously before customers passing in and out of the store.

Made of the best materials, exceptionally strong and durable. Cabinets are 35 inches wide, 22 inches high, and 9 1/2 inches deep. Shipping weight 55 lbs.

Write us today for full particulars.



The Miller Bros. Spark Plug Cabinet. Price \$15.00 F. O. B.

MILLER BROTHERS, Lewisburg, Pa.
Manufacturers of Garage Supplies

Please mention The Automobile Trade Directory

CAPS, Hub, for Fords (Continued)

- U. S. Metal Goods Co., 5311 Euclid Ave., (Cleveland, O. (See page 745.)
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y. (See page 389.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

CAPS, Motorists

(See also *Clothing, Motorists*)

- Bishop Co., J. H., Wyandotte, Mich.
 Bradley Knitting Co., Delavan, Wis.
 Dinner Co., Isaac H., 694 Washington St., Boston, Mass.
 Favorite Knitting Mills, 1333 W. Sixth St., Cleveland, O.
 Forman & Co., E., 573 Washington St., Boston, Mass.
 Freeman, David, 326 W. Van Buren St., Chicago, Ill.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.
 Hendrickson Hat Co., A. P., 137-39 S. Meridian St., Indianapolis, Ind.
 Kaplan, Frank, & Dunn, 113-15 University Pl., New York, N. Y.
 Lasky & Levy, 394 Broadway, New York, N. Y.
 Patriek-Duluth Woolen Mills, Duluth, Minn.
 Revillon Freres, 19 W. 34th St., New York, N. Y.
 Spear & Co., Woodhaven, N. Y.

CAPS, NON-EXPLOSIVE TANK-FILLING

—See Tubes, Non-Explosive Tank-Filling

CAPS, Brass Radiator and Tank

- Aeco—See Wolkow & Sons.
 Alco—See American Insulator Co.
 Albany Billiard Ball Co., Delaware Ave. & Whitehall Rd., Albany, N. Y.
 American Brass Co., Waterbury, Conn. (See page 165.)
 American Insulator Corp., New Freedom, Pa. "Alco." (See page 267.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Auto Ball Cock Co., Hazleton, Pa.
 Autoware Corp., 441 State St., Detroit, Mich. "Dann."
 Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)
 Bush Mfg. Co., Hartford, Conn. (See page 787.)
 Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Crosby Co., Buffalo, N. Y. (See page 893.)
 Dann—See Autoware Corp.
 Frontier Brass Foundry, 313 Elmwood Ave., Niagara Falls, N. Y.
 Garfield Mfg. Co., Garfield, N. J.
 Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 837.)
 Hunt & Co., E. J., Equity Bldg., Dayton, O. (Sales Representatives for S. H. Thomson Mfg. Co. Dayton, O.)
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Pfau Mfg. Co., Cincinnati, O.
 Rust Mfg. Co., Marshalltown, Iowa.
 Seoville Mfg. Co., Waterbury, Conn. (See page 831.)
 Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo.
 Thomson Mfg. Co., S. H.—See Hunt & Co.
 Waterbury Mfg. Co., 336 Grand St., Waterbury, Conn.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 Wolkow & Sons, F., 123 W. Market St., Louisville, Ky. "Aeco."

CAPS, Radiator, for Fords

(Including both standard and special caps)

- Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Auto Ball Cock Co., Hazleton, Pa.
 Bergwald Mfg. Co., 21-33 E. Fourth St., New York, N. Y.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)
 Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
 Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.
 Empress—See Bowen Products Corp.
 Eyrill—See Walker Mfg. Co.
 Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Frontier Brass Foundry, 313 Elmwood Ave., Niagara Falls, N. Y.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 987.)
 Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 837.)
 Home Light Co., 3351 Milwaukee Ave., Chicago, Ill.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 King—See Palmyra Mfg. Co.
 Metal Stamping Co., 11th St. & East Ave., Long Island City, N. Y.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Palmyra Mfg. Co., Palmyra, Pa. "King."
 Peerless—See Corcoran Mfg. Co.
 Radiator Funnel Cap Co., 3852 Grand Blvd., Chicago, Ill.
 Service Mfg. Co., 211-13 Center St., New York, N. Y.
 Stout's Mfg. Co., Lockport, N. Y. (See page 699.)
 Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y. (See page 389.)
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Eyrill."
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

CAPS, Rubber or Composition Radiator

- American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Everything is listed under the NOUN or principal word



UNIVERSAL PUSH BUTTON

2,000,000 in use

In appearance this button has the automobile look of simplicity, strength and reliability.

The button itself is large and get-at-able, but there is no unnecessary bulk, in fact, it is about all-button. Retails for 30c.

Write us today for price in quantity.

The General Phono Mfg. Co.

Formerly Named

The Garford Mfg. Co.

Elyria, Ohio

Boyco Service Units Mean Quick Sales

Made in five combinations, for carrying extra gasoline, oil and water. They fill a universal need—give safety, comfort and satisfaction to every motorist. Write for our Booklet "Canteens and Carriers."

Boyle Manufacturing Co.

Los Angeles

Ask your Jobber for BOYCO products. If he cannot supply you, mail us your order with his name and address; service will be rendered.



Gordon Cam Shafts

It goes without saying that when an organization made up of conscientious men, who have had years of technical and practical experience, have devoted twelve years to their chosen line, that they can produce a product second to none.

The truth of the above assumption is well proven by the fact that we are never able to serve all of those who desire us to do so. This in spite of the fact that we are continually enlarging our plant and adding to our equipment, which is universally recognized as being the most up to date and highly specialized to be found anywhere, and we cannot refrain from saying that,

"Some Build More, None Build Better."

We stand ready at all times to give you the benefit of our experience and take pride in saying that our work has never been criticized by our customers.

L. O. GORDON MANUFACTURING CO.

MUSKEGON, MICH.

Please mention The Automobile Trade Directory

CAPS, Rubber or Composition, Radiator (Continued)

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 205.)
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.
 International Insulating Corp., ft. Mechanic St., Springfield, Mass.
 Luzerne Rubber Co., Mulrhead Ave., Trenton, N. J.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Niagara Insul-Bake Specialty Co., 483-93 Delaware Ave., Albany, N. Y.
 Pouvalsmith Corp., Smith St., Poughkeepsie, N. Y. "Povasco."
 Povasco—See Pouvalsmith Corp.
 Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.
 Vitalic—See Continental Rubber Works.

CAPS, TANK—See Caps, Brass Radiator

CAPS, TANK, FOR FORDS—See Caps, Gasoline Tank

CAPS, Tire Dust Valve

Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Lox-On."
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 696.)
 Just Mfg. Co., A. L., Syracuse, N. Y. "Nu-Way."
 Lox-On—See Automatic Safety Tire Valve Corp.
 Nu-Way—See Just Mfg. Co.
 Schrader's Son, A., Brooklyn, N. Y. (See page 506.)

CAR BEDS—See Beds or Berths, Car

CAR BERTHS—See Beds or Berths, Car

CAR LOADERS—See Loaders, Truck

CAR RAISING SKIDS—See Skids, Car Raising

CAR REPORTS—See Reports, Used Car Market

CAR SHIPPING BLOCKS—See Chocks, Blocks and Clamps, Car Shipping

CAR SHIPPING CHOCKS—See Chocks, Blocks and Clamps, Car Shipping

CAR SHIPPING CLAMPS—See Chocks, Blocks and Clamps, Car Shipping

CAR WASHING BRUSHES—See Washers, Vehicle

CAR WIRING CONDUITS—See Conduit, Flexible Car Wiring

CARBIDE, Calcium

American Carbolite Sales Co., 301 S. 55th Ave., W., Duluth, Minn. "Carbolite."
 Carbolite—See American Carbolite Sales Co.
 Union Carbide Sales Co., 122 S. Michigan Blvd., Chicago, Ill.

CARBON BURNING OUTFITS—See Machines, Motor Decarbonizing

CARBON REMOVERS—See Compounds, Carbon; also Machines, Motor Decarbonizing; also Removers, Carbon; also Moisteners, Air or Mixture; also Scrapers, Carbon

CARBON REMOVING COMPOUNDS—See Compounds, Carbon Removing

CARBON REMOVING MACHINES—See Machines, Engine Decarbonizing

CARBON SCRAPERS—See Scrapers, Carbon

CARBONIA FINISH—See Treating, Heat

CARBORUNDUM PAPER—See Paper, Emery and Sand

CARBORUNDUM WHEELS—See Wheels, Grinding

CARBURETOR CONTROLS—See Controls, Dash and Steering Column Carburetor

CARBURETOR CONTROLS FOR FORDS—See Controls, Dash Carburetor

CARBURETOR FLOATS—See Floats

CARBURETOR INTAKE STRAINERS—See Cleaners, Air

CARBURETOR REGULATORS FOR FORDS—See Regulators, Thermostatic Carburetor

CARBURETORS, Aircraft Gasoline

Ball & Ball—See Penberthy Injector Co.
 Bencke & Kropf Mfg. Co., 2659 W. 21st St., Chicago, Ill. "Rayfield."
 (See page 193.)
 Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
 Camden-Anchord Rockland Machine Co., Camden, Me. "Knox."
 Claudel Carburetor Co., 192 Jackson Ave., Long Island City, N. Y. (See page 389.)
 Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
 Kingston—See Byrne, Kingston & Co.
 Knox—See Camden-Anchord Rockland Machine Co.
 Marvel Carburetor Co., Flint, Mich. (See pages 193 and 197.)
 Master Carburetor Co., Los Angeles, Cal. (See page 193.)
 Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 201.)
 Newcomb—See Holtzer-Cabot Electric Co.
 Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 561.)
 Rayfield—See Bencke & Kropf Mfg. Co.
 Schebler—See Wheeler-Schebler Carburetor Co.
 Shain, Chas. D., Brooklyn, N. Y.
 Shakespeare Co., Kalamazoo, Mich.

Everything is listed under the NOUN or principal word

Tillotson

CARBURETOR

The Name TILLOTSON

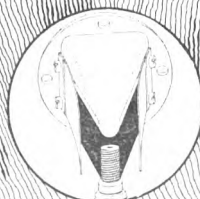
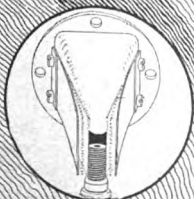
represents a distinct achievement in the automotive industry. By this sign, engineers recognize not only a carburetor of unusual merit but an instrument possessing every quality of perfection.

¶ Through the perfection and adaptation of an automatic air valve, a correct register in the metering of fuel and air is maintained throughout every range of engine speed.

¶ That quality of velvety smoothness with which the motor performs its duty, the instantaneous and positive motor response to every demand for energy show Tillotson flexibility.

May we figure on your carburetor requirements?

The Tillotson Manufacturing Co.
Toledo, Ohio



Automatic Air Valve

Please mention The Automobile Trade Directory

CARBURETORS, Aircraft, Gasoline (Continued)

- Stromberg Motor Devices Co., Dept. 420,
64 E. 25th St., Chicago, Ill.
(See page 915.)
- Sunderman Corp., Newburgh, N. Y.
(See page 393.)
- Webber Mfg. Co., 66-68 Stanhope St., Boston,
Mass.
- Wheeler-Schebler Carburetor Co., Indi-
anapolis, Ind. "Schebler."
(See page 197.)
- Zenith Carburetor Co., Detroit, Mich.
(See page 195.)

CARBURETORS, Gasoline

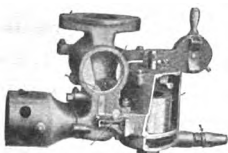
(For Mixing Valves or Vaporizers—See Vaporizers)

- Aero Products Co.—See Gill Mfg. Co.
- Air-Friction Carburetor Co., First & Mad-
ison Sts., Dayton, O.
- American Auto Products Co., 240-44 S. Broad-
way, Denver, Colo. "J. B. J. Metro."
- Ames Carburetor Co., 1512-14 Clark St., Ra-
cine, Wis.
- Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
- Automatic Steam Carburetor Co., 1241 S.
Michigan Ave., Chicago, Ill.
- Ball & Ball—See Penberthy Injector Co.
- Ball Spray—See Shalin, Chas. D.
- Beacon Bronze Co., Beacon, N. Y. "Tol-
mie." (See page 563.)
- Beneke & Kropf Mfg. Co., 2559 W. 21st
St., Chicago, Ill. "Rayfield."
(See page 193.)
- Bennett—See Wilcox-Bennett Carburetor Co.
- Booty Carburetor Mfg. Co., 554 W. Harrison
St., Chicago, Ill.
- Brandenburg Bros. & Eccleston, 1112 S.
Michigan Ave., Chicago, Ill. (Sole Dis-
tributors for McFell Signal Co., Chicago,
Ill. "Gilles.")
- Briscoe Devices Co., 212 Osmon St., Pontiac,
Mich. "Scoe."
- Brown Carburetor Co., 347 Madison Ave.,
New York, N. Y.
- Byrne, Kingston & Co., Kokomo, Ind., "Kings-
ton."
- Camden Anchor-Rockland Machine Co., Cam-
den, Me. "Knox."
- Cammen Laboratories Co., 42 W. 39th St.,
New York, N. Y. "Jetajet."
- Caloretor—See Vaporator Corp.
- Carter Carburetor Co., 2338-40 N. Spring Ave.,
St. Louis, Mo.
- Claudel Carburetor Co., 102 Jackson Ave.,
Long Island City, N. Y. (See page 389.)
- Columbia Carburetor Co.—See Courtesy Ser-
vice and Sales Co.
- Courtesy Service & Sales Co., 1302 S.
Wabash Ave., Chicago, Ill. (Sole Dis-
tributors for Columbia Carburetor Co.,
Chicago, Ill.) (See page 841.)
- D. K. W.—See Duquesne Auto Accessory Co.
- Daley, Walter A., 3520 Melrose St., Chicago,
Ill.
- Detroit Lubricator Co., 5842-5986 Trumbull
Ave., Detroit, Mich. "Stewart."
- Douglas Auto-Apppliance Co., 2845 Chicago
Ave., Minneapolis, Minn.
- Duquesne Auto Accessory Co., New Kensing-
ton, Pa. "D. K. W."
- Eagle Carburetor Co., 11502 Madison Ave.,
N. W., Cleveland, O.
- Ensign Carburetor Co., E. 17th St., Los
Angeles, Cal. (See page 239.)
- Ess-Ess—See Scott & Sons Co.
- Fulton-Greuter Engineering Co., Sixth Ave. &
Baymiller St., Cincinnati, O.
- G. & A. Carburetor Co., 105-07 E. 13th St.,
New York, N. Y.
- Gardner Auto Products Co., Detroit, Mich.
(Sole Distributors for Gardner Carbu-
retor & Brass Works, Detroit, Mich.)
(See page 197.)
- Gardner Carburetor & Brass Works—See
Gardner Auto Products Co.
- Gill Mfg. Co., 8300 S. Chicago Ave., Chi-
cago Ill. (Sole Distributors for Aero
Products Co., Cleveland, O.)
(See pages 799 and 800.)
- Gilles—See Brandenburg Bros. & Eccleston.
- H. & N. Carburetor Co., 138 West Ave., Long
Island City, N. Y.
- Heco—See Heinze Electric Co.
- Heinze Electric Co., Lawrence St., Lowell,
Mass. "Heco."
- Hess Mercury Carburetor Mfg. Co., Valpa-
raiso, Ind.
- Holley Carburetor Co., Vancouver Ave. & P.
M. R. R., Detroit, Mich.
- Holtzer-Cabot Electric Co., 125 Armory St.,
Boston, Mass. "Newcomb."
- Hoyt Carburetor & Automobile Co., 45 Union
Ave., Boston, Mass.
- J. B. J. Metro—See American Auto Products
Co.
- Jetajet—See Cammen Laboratories Co.
- Johnson Co., 1909 E. Forest Ave., Detroit,
Mich.
- Juhass Carburetor Co., 244 W. 49th St., New
York, N. Y.
- Jupiter—See Orem Motor Protector Co.
- Justrite—See Wilcke-Armstrong Co.
- Kemp, J. P., 418 Evesham Ave., Baltimore,
Md.
- Kingston—See Bryne, Kingston & Co.
- Knox—See Camden Anchor-Rockland Machine
Co.
- L. H. P. Products Co., 139 N. Clark St., Chi-
cago, Ill.
- Lacharnay—See Lyons Ignition Co.
- Light Mfg. & Foundry Co., Union & Queen
Sts., Pottstown, Pa. "Parkin."
- Lyons Ignition Co., News Bldg., Paterson, N. J.
"Lacharnay."
- McFell Signal Co.—See Brandenburg Bros. &
Eccleston.
- M. T.—See Sunderman Corp.
- Marvel Carburetor Co., Flint, Mich.
(See pages 193 and 197.)
- Master Carburetor Co., Los Angeles, Cal.
(See page 193.)
- Miller Mfg. Co., Harry A., 17th & S. Los
Angeles Sts., Los Angeles, Cal.
(See page 201.)
- Motovic Products Corp., 441 State St., De-
troit, Mich.
- National Auto Accessory Co., Salem Depot,
N. H.
- Never-Fail Carburetor Co., 192-200 Jack-
son Ave., Long Island City, N. Y.
(See page 195.)
- Newcomb—See Holtzer-Cabot Electric Co.
- Nitro—See Sunderman Corp.
- North Chicago Machine Co., Commonwealth
Ave. & 32d St., North Chicago, Ill. "Palm-
bla."
- Orem Motor Protector Co., 2827 N. Calvert
St., Baltimore, Md. "Jupiter."
- Palmbla—See North Chicago Machine Co.
- Parkin—See Light Mfg. & Foundry Co.
- Penberthy Injector Co., Detroit, Mich.
"Ball & Ball." (See page 561.)
- Rayfield—See Beneke & Kropf Mfg. Co.
- Reld, David, 25 Liberty St., Buffalo, N. Y.
"Steinbrenner."
- Schebler—See Wheeler-Schebler Carburetor
Co.
- Scoe—See Briscoe Devices Co.

Everything is listed under the NOUN or principal word

Master Carburetor

FOR LOW GRADE FUEL



CARS, TRUCKS, TRACTORS,
STATIONARY AND MARINE
GASOLINE ENGINES

EXCLUSIVE TERRITORY
TO LIVE DEALERS

25%
MORE **[MILEAGE
SPEED OR
POWER]**

MONEY REFUNDED

Master Carburetor Co.

Los Angeles, Calif., U. S. A.

MARVEL

"It's name defines it"

CARBURETER

POWER—RELIABILITY— ECONOMY

Standard Equipment on Buick, Oakland, Nash, Scripps-Booth, G.M.C. Trucks, Wilson Trucks, U. S. Govt. Army Trucks, Etc.

Models in stock adapted to all makes of passenger and commercial cars. All carbureters sold on 30-day trial; money back if not satisfied

Special models for Motor Cycles, Aeroplanes, Tractors and Motor Boats

Write for Model E Booklet

Distributors:

Marvel Carburetor Sales Co.	Boston, Mass.
Weyand & McMahon	Buffalo, N. Y.
Marvel Carburetor Sales Co.	Indianapolis, Ind.
Marvel Carburetor Sales Co.	Chicago, Ill.
Auto Supply Co.	Nashville, Tenn.
Wholesale Auto Supply House	Tampa, Fla.
Joseph Schwartz Co.	New Orleans, La.
Herrick Hardware Co.	Waco, Tex.
Marvel Carburetor Sales Co.	Kansas City, Mo.
W. S. Nott Co.	Minneapolis, Minn.
Motor Products Sales Co.	Seattle, Wash.
Union Hardware Metal Co.	Los Angeles, Calif.
Edwards-Warden Motor Parts Co.	Salt Lake City, Utah
Motor Supply Co.	Phoenix, Ariz.

MARVEL CARBURETER CO.

Flint, Mich., U.S.A.

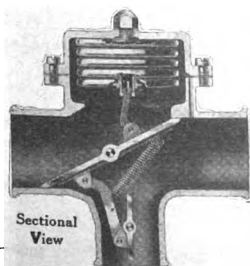
RAYFIELD

MOTOR THERMOSTAT

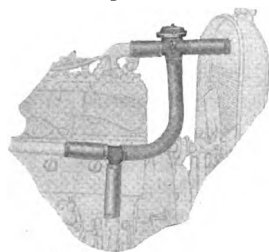
Rayfield Thermostats Make Winter Driving A Pleasure

By automatically controlling the circulation of water through the motor block, the Rayfield Thermostat enables a cold motor to warm up in two minutes. It stays warm longer. Starting is easier. Every motorist should have one on his car.

DEALERS
Write us for details.



Sectional
View



Showing Installation

Beneke & Kropf Mfg. Co.

2559 W. 21st Street

Chicago, Ill.

Please mention The Automobile Trade Directory

CARBURETORS, Gasoline (Cont'd)

Scott & Sons Co., Medford, Mass. "Ees-Ess."
 Shain, Chas. D., Brooklyn, N. Y. "Ball Spray."
 Shakespeare Co., Kalamazoo, Mich.
 Simplex No-Flote Carburetor Co., Detroit
 Savings Bank Bldg., Detroit, Mich.
 Smith & Sons, S., 154 Nassau St., New
 York, N. Y. (Importers.)
 (See page 263.)
 Star-K—See Stark-Inland Machine Works.
 Steinbrenner—See Reid, David.
 Stewart—See Detroit Lubricator Co.
 Stokes Carburetor Co., 384 E. 133d St., New
 York, N. Y.
 Stromberg Motor Devices Co., Dept. 420,
 64 E. 25th St., Chicago, Ill.
 (See page 915.)
 Sunderman Corp., Newburgh, N. Y. "M.
 T.," "Nitro." (See page 393.)
 Swan—See Yale & Towne Mfg. Co.
 Tillotson Mfg. Co., Toledo, O.
 (See page 191.)
 Tolmie—See Beason Bronze Co.
 Toquet Carburetor Corp., Dept. E, West-
 port, Conn. (See page 195.)
 Trader & Co., R. V., 314 Atlantic Ave., Mc-
 Keesport, Pa.
 U. & J. Carburetor Co., 501-09 W. Jackson
 Blvd., Chicago, Ill.
 Vaporator Corp., Majestic Bldg., Milwaukee,
 Wis. "Caloretor."
 Webber Mfg. Co., 66-68 Stanhope St., Boston,
 Mass.
 Wheeler-Schebler Carburetor Co., Indi-
 anapolis, Ind. "Schebler."
 (See page 197.)
 Wilcox-Bennett Carburetor Co., 1020 Marshall
 St., N. E., Minneapolis, Minn. "Bennett."
 Wilcke-Armstrong Co., 3199 Monroe Ave., De-
 troit, Mich. "Justrite."
 Yale & Towne Mfg. Co., Stamford, Conn.
 "Swan." (See page 599.)
 Zenith Carburetor Co., Detroit, Mich.
 (See page 195.)

CARBURETORS, Gasoline, for Fords

Air Friction Carburetor Co., First & Madison
 Sts., Dayton, O.
 Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Ball-Spray—See Shain, Chas. D.
 Beneke & Kropf Mfg. Co., 2559 W. 21st
 St., Chicago, Ill. "Rayfield."
 (See page 193.)
 Booty Carburetor Mfg. Co., 554 W. Harrison
 St., Chicago, Ill.
 Briscoe Devices Co., 212 Osmun St., Pontiac,
 Mich. "Scoe."
 Byrne, Kingston & Co., Kokomo, Ind. "Kings-
 ton."
 Camden Anchor-Rockland Machine Co., Cam-
 den, Me. "Knox."
 Carter Carburetor Co., 2338-40 N. Spring Ave.,
 St. Louis, Mo.
 D. & B.—See Harrington Co.
 Detroit Lubricator Co., 5842-5986 Trumbull
 Ave., Detroit, Mich. "Stewart."
 Donning Carburetor Corp., Sanford St. &
 Unquowa Rd., Fairfield, Conn.
 Douglas Auto-Appliance Co., 2845 Chicago
 Ave., Minneapolis, Minn.
 Duntley—See Little Giant Truck Co.
 Ecco—See Economy Carburetor Co.
 Economy Carburetor Co., 1664 Frattney St.,
 Milwaukee, Wis. "Ecco."
 Ensign Carburetor Co., E. 17th St., Los
 Angeles, Cal. (See page 289.)
 Famasco Distributing Co., 684 Main St.,
 Buffalo, N. Y. (Sole Distributors for
 Mayer Carburetor Co., Buffalo, N. Y.)
 (See page 421.)
 Gardner Auto Products Co., Detroit, Mich.
 (Sole Distributors for Gardner Carbu-
 retor & Brass Works, Detroit, Mich.)
 (See page 197.)
 Gardner Carburetor & Brass Works—See
 Gardner Auto Products Co.
 Griffin Carburetor Co., 195 Paterson St., Pater-
 son, N. J.
 H. & N. Carburetor Co., 128 West Ave., Long
 Island City, N. Y.
 Harrington Co., O. C., 4133 Fillmore St., Chi-
 cago, Ill. "D. & B."
 Heco—See Heinze Electric Co.
 Heinze Electric Co., Lawrence St., Lowell,
 Mass. "Heco."
 Holley Carburetor Co., Vancouver Ave. & P.
 M. R. R., Detroit, Mich.
 Johnson Co., 1909 E. Forest Ave., Detroit,
 Mich.
 Jupiter—See Orem Motor Protector Co.
 Justrite—See Wilcke-Armstrong Co.
 Kingston—See Byrne, Kingston & Co.
 Knox—See Camden Anchor-Rockland Machine
 Co.
 Little Giant Truck Co., Little Giant Bldg., Chi-
 cago, Ill. "Duntley."
 M. T.—See Sunderman Corp.
 Marvel Carburetor Co., Flint, Mich.
 (See pages 193 and 197.)
 Master Carburetor Co., Los Angeles, Cal.
 (See page 193.)
 Mayer Carburetor Co.—See Famasco Distri-
 buting Co.
 Miller Mfg. Co., Harry A., 17th & E. Los
 Angeles Sts., Los Angeles, Cal.
 (See page 201.)
 Motovic Products Corp., 441 State St., De-
 troit, Mich.
 Never-Fail Carburetor Co., 192-200 Jack-
 son Ave., Long Island City, N. Y.
 (See page 195.)
 Nitro—See Sunderman Corp.
 North Chicago Machine Co., Commonwealth
 Ave. & 22d St., North Chicago, Ill. "Palm-
 bla."
 Orem Motor Protector Co., 2827 N. Calvert St.,
 Baltimore, Md. "Jupiter."
 Palmba—See North Chicago Machine Co.
 Rayfield—See Beneke & Kropf Mfg. Co.
 Reid, David, 25 Liberty St., Buffalo, N. Y.
 "Steinbrenner."
 Schebler—See Wheeler-Schebler Carburetor Co.
 Scoe—See Briscoe Devices Co.
 Shain, Chas. D., Brooklyn, N. Y. "Ball-
 Spray."
 Steinbrenner—See Reid, David.
 Stewart—See Detroit Lubricator Co.
 Stokes Carburetor Co., 384 E. 133rd St., New
 York, N. Y.
 Stromberg Motor Devices Co., Dept. 420,
 64 E. 25th St., Chicago, Ill.
 (See page 915.)
 Sunderman Corp., Newburgh, N. Y. "M.
 T.," "Nitro." (See page 393.)
 Thermo Carburetor Co., 1127 W. Harrison St.,
 Chicago, Ill.
 Tillotson Mfg. Co., Toledo, O.
 (See page 191.)
 Toquet Carburetor Corp., Dept. E, West-
 port, Conn. (See page 195.)
 U. & J. Carburetor Co., 501-09 W. Jackson
 Blvd., Chicago, Ill.
 Webber Mfg. Co., 66-68 Stanhope St., Boston,
 Mass.

Everything is listed under the NOUN or principal word

TOQUET

Pronounced TOKAY

The Carburetor Built for the Motor
*LET US DEMONSTRATE FOR YOUR
 Equipment*

The Perfect Atomizer



"The
 Toquet
 Feature"

Non-Adjustable Model for the Ford

*Write for Distributors' Proposition on our
 New Models for*

FORDS AND DODGES

Complete Line for All Cars Will Soon Be Ready for
 Distribution

THE TOQUET CARBURETOR CORP.
 Dept. E Westport, Conn.

NEVER-FAIL

Timer Unit for Fords

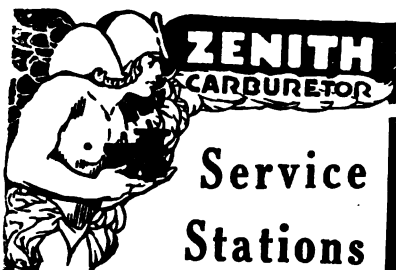
The little brush that
 operates successfully in
 pitted, worn timer shells
 —gets double service
 from each shell. List
 price 50 cents.

NEVER-FAIL

Carburetor for Fords

Increases power—saves
 gas. Gives easy starting
 —smooth running—
 quick acceleration. List
 price \$10.

Never-fail Carburetor Company
 192-200 Jackson Ave.,
 Long Island City, N. Y.



Service Stations

In every part of United States
 and Canada. A partial list of
 Zenith distributors follows:

- ARK.—Little Rock, Holman & Moseley.
 CALIF.—San Francisco, Lathan Auto Supply Co.
 COLO.—Denver, Gall Auto Specialty Co.
 FLA.—Tampa, Auto Electric Service Co.
 GA.—Atlanta, Southern Auto & Equipment Co.
 ILL.—Chicago, Zenith Carburetor Co., 2000 Wabash Ave.
 KY.—Louisville, Atlas Machine Co.
 LA.—New Orleans, J. K. Rippard.
 MASS.—Boston, Motor Parts Co. Springfield, E. B. Atmus.
 MICH.—Detroit, Auto Electric & Service Corp.
 MO.—Kansas City, Electric Products Co. St. Louis, Automotive Engineering Co.
 MINN.—Minneapolis, General Motor Service Co.
 NEBR.—Omaha, Paxton & Gallagher Co.
 N. Y.—Buffalo, Henry and Ferguson, Inc. New York City, Zenith Carburetor Co., 692 11th Ave.
 N. C.—Fayetteville, Fayetteville Storage Battery Co.
 OHIO.—Cleveland, Cleveland Ignition Co.
 PA.—Philadelphia, Motor Parts Service.
 S. C.—Columbia, Carolina Tire & Accessory Co.
 S. D.—Sioux Falls, H. F. Brownell Co.
 TENN.—Memphis, Automotive Elec. & Service Co. Chattanooga, Mudge Auto Electric Co.
 TEXAS.—Fort Worth, Starter Service Co. El Paso, Automobile Parts Co.
 VA.—Richmond, W. M. Reynolds, Inc.
 UTAH.—Salt Lake City, J. Louis Anderson.
 WASH.—Spokane, Wm. E. Chase Engr. Co.
 ALTA.—Calgary, The Motor Car Supply Co. Ltd.
 B. C.—Vancouver, Millen's B. C. Ltd.
 ONT.—Toronto, Cutten & Forster, Ltd.
 SASK.—Regina, Motor Supplies Ltd.

Zenith Carburetor Co.
 DETROIT, U. S. A.

New York

Chicago

Please mention The Automobile Trade Directory

CARBURETORS, Gasoline, for Fords (Continued)

Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler."
(See page 197.)
Wilcox-Armstrong Co., 8199 Monroe Ave., Detroit, Mich. "Justrite."
Zenith Carburetor Co., Detroit, Mich.
(See page 195.)

CARBURETORS, Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Bennett—See Wilcox-Bennett Carburetor Co.
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "JetaJet."
Conservation Carburetor Co., Citizens Nat'l Bank Bldg., Des Moines, Ia.
Dual Carburetor & Mfg. Co., Superior Ave. & E. 40th St., Cleveland, O.
Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 239.)
Good Inventions Co., 271 37th St., Brooklyn, N. Y.
H. & N. Carburetor Co., 133 West Ave., Long Island City, N. Y.
Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 809.)
JetaJet—See Cammen Laboratories Co.
Knox—See Camden Anchor-Rockland Machine Co.
L. H. P. Products Co., 189 N. Clark St., Chicago, Ill.
Linga—See Specialty Brass Co.
Master Carburetor Co., Los Angeles, Cal. (See page 193.)
Nitro—See Sunderman Corp.
Senrab Carburetor Co., Sea Cliff, N. Y.
Specialty Brass Co., S. Howland Ave., Kenosha, Wis. "Linga."
Star-K—See Stark-Inland Machine Works.
Stromberg Motor Devices Co., Dept 420, 64 E. 25th St., Chicago, Ill. (See page 393.)
Sunderman Corp., Newburgh, N. Y. "Nitro." (See page 393.)
Tillotson Mfg. Co., Toledo, O. (See page 191.)
Trader & Co., R. V., 314 Atlantic Ave., McKeesport, Pa.
Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARBURETORS, Kerosene, for Fords

(For Fuel or Mixture Heaters—see Heaters, Mixture; for Special Jetted Manifolds—see Manifolds, Special and Jetted.)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Frankfort Carburetor Co., Frankfort, Ind.
Henner Automatic Oil Carburetor Co., 1000 E. Main St., Rochester, N. Y.
M. T.—See Sunderman Corp.
Master Carburetor Co., Los Angeles, Cal. (See page 193.)

Nitro—See Sunderman Corp.
Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 393.)

CARBURETORS, Motor Boat Gasoline

(See also Valves, Generator)

Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.
Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield."
(See page 193.)
Bennett—See Wilcox-Bennett Carburetor Co.
Booty Carburetor Mfg. Co., 554 W. Harrison St., Chicago, Ill.
Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Carter Carburetor Co., 2333-40 N. Spring Ave. St. Louis, Mo.
Eagle Carburetor Co., 11502 Madison Ave. N. W., Cleveland, O.
Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 239.)
Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James-Acorn."
Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
James-Acorn—See Generator Valve Co.
Kingston—See Byrne, Kingston & Co.
Knox—See Camden Anchor-Rockland Machine Co.
Master Carburetor Co., Los Angeles, Cal. (See page 193.)
Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 201.)
Monarch Valve Co., 112 Front St., Brooklyn, N. Y.
Newcomb—See Holtzer-Cabot Electric Co.
North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbra."
Palmbra—See North Chicago Machine Co.
Rayfield—See Beneke & Kropf Mfg. Co.
Schebler—See Wheeler-Schebler Carburetor Co.
Scoe—See Briscoe Devices Co.
Shain, Chas. D., Brooklyn, N. Y.
Shakespeare Co., Kalamazoo, Mich.
Stromberg Motor Devices Co., Dept. 420, 64 E. 25th St., Chicago, Ill. (See page 393.)
Sunderman Corp., Newburgh, N. Y. (See page 393.)
Webber Mfg. Co., 65-68 Stanhope St., Boston, Mass.
Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler."
(See page 197.)
Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
Zenith Carburetor Co., Detroit, Mich. (See page 195.)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Bennett—See Wilcox-Bennett Carburetor Co.

CARBURETORS, Motor Boat Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Bennett—See Wilcox-Bennett Carburetor Co.

Everything is listed under the NOUN or principal word

GARDNER *For Ford Cars Only*
 THERMOSTAT
CARBURETORS Retail Price
 \$12.50

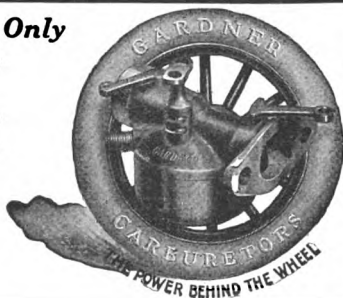
EFFICIENCY and ECONOMY

WHY?

The Thermostat Tells

Dealers write for terms

GARDNER AUTO PRODUCTS CO.
 DETROIT, MICHIGAN

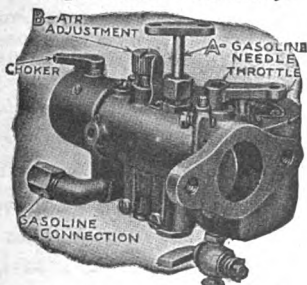


MARVEL

"Its name defines it"

MODEL N FOR FORDS

Designed especially to fit right in place of regular Ford installation. No changes whatsoever necessary.



A high class instrument for Ford cars. Increases mileage to 22-25 miles per gallon. Sold on 30 day trial. Money back if not satisfactory.

Dealers' proposition on request.

Price F.O.B. Factory \$10.00

Flint, Mich., U.S.A.

WRITE FOR CATALOG

MARVEL CARBURETOR CO.

SCHEBLER

THE STANDARD

CARBURETOR

OF THE WORLD

WHEELER-SCHEBLER
CARBURETOR CO., Inc.

MANUFACTURERS

INDIANAPOLIS, : : U. S. A.

We are pioneers in
 Perfect Carburetion

WRITE FOR CATALOG

AUTOMOBILE BEARINGS.

OUR SPECIALTY

Finished or in the rough, or babbitt-lined

BRASS, BRONZE & ALUM. CASTINGS

Brass and bronze bushings carried in stock

BABBITT METALS

A. GILBERT & SONS BRASS FOUNDRY COMPANY

St. Louis, U. S. A.

Please mention The Automobile Trade Directory

CARBURETORS, Motor Boat Kerosene (Continued)

Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 239.)
 Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 809.)
 Knox—See Camden Anchor-Rockland Machine Co.
 Master Carburetor Co., Los Angeles, Cal. (See page 193.)
 Wilcox-Bennett Carburettor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARBURETORS, Motorcycle Gasoline

Beneke & Kropf Mfg. Co., 2550 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)
 Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
 Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.
 Kingston—See Byrne-Kingston Co.
 Marvel Carburetor Co., Flint, Mich. (See pages 193 and 197.)
 Master Carburetor Co., Los Angeles, Cal. (See page 193.)
 Rayfield—See Beneke & Kropf Mfg. Co.
 Schebler—See Wheeler-Schebler Carburetor Co.
 Shain, Chas. D., Brooklyn, N. Y.
 Sunderman Corp., Newburgh, N. Y. (See page 393.)
 Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 197.)
 Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Tractor Gasoline

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Beneke & Kropf Mfg. Co., 2550 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)
 Bennett—See Wilcox-Bennett Carburettor Co.
 Booty Carburetor Mfg. Co., 554 W. Harrison St., Chicago, Ill.
 Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
 Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
 Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 239.)
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James-Acorn."
 Holtz-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
 James-Acorn—See Generator Valve Co.
 Kingston—See Byrne-Kingston Co.
 Knox—See Camden Anchor-Rockland Machine Co.
 Knox Motors Associates, Springfield, Mass.
 Marvel Carburetor Co., Flint, Mich. (See pages 193 and 197.)
 Master Carburetor Co., Los Angeles, Cal. (See page 193.)
 Miller Mfg. Co., Harry A., 17th & S. Los Angeles Sts., Los Angeles, Cal. (See page 201.)
 Newcomb—See Holtz-Cabot Electric Co.
 Never-Fail Carburetor Co., 192-200 Jackson Ave., Long Island City, N. Y. (See page 195.)

North Chicago Machine Co., Commonwealth Ave., & 23d St., North Chicago, Ill. "Palmbia."
 Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
 Palmbia—See North Chicago Machine Co.
 Rayfield—See Beneke & Kropf Mfg. Co.
 Schebler—See Wheeler-Schebler Carburetor Co.
 Shain, Chas. D., Brooklyn, N. Y.
 Shakespear Co., Kalamazoo, Mich.
 Stromberg Motor Devices Co., Dept 420, 44 E. 25th St., Chicago, Ill. (See page 815.)
 Sunderman Corp., Newburgh, N. Y. (See page 393.)
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
 Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.
 Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 197.)
 Wilcox-Bennett Carburettor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
 Zenith Carburetor Co., Detroit, Mich. (See page 195.)

CARBURETORS, Tractor Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Bennett—See Wilcox-Bennett Carburettor Co.
 Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 239.)
 Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
 Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 809.)
 Kero-Karburetor—See Western Carburetor Co.
 Knox—See Camden Anchor-Rockland Machine Co.
 Master Carburetor Co., Los Angeles, Cal. (See page 193.)
 Neverfail Carburetor Co., 200 Jackson Ave., Long Island City, N. Y. (See page 195.)
 Western Carburetor Co., Alma, Mich. "Kero-Karburetor."
 Wilcox-Bennett Carburettor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARPET BINDING—See Binding, Mat and Carpet

CARPET, Coach

(See also Trimmings, Cloth and Carpet)

Amber—See Sloane, W. & J.
 Bridgeport Coach Lace Co., 818 Wood Ave., Bridgeport, Conn. (See page 165.)
 Cochrane Mfg. Co., East Dedham, Mass.
 Dobson, John & James, 899 Chestnut St., Philadelphia, Pa.
 Dusenbury & Co., Louis, New York, N. Y. (Sole Distributors for Magee Carpet Co., Bloomingburg, Pa.) (See page 993.)
 Highspire—See Sloane, W. & J.
 Hirst-Roger Co., Philadelphia, Pa. (See page 199.)
 Magee Carpet Co.—See Dusenbury & Co.
 Masland & Sons—See Sloane, W. & J.
 Midland Fabrics Co., 225 W. 58th St., New York, N. Y. (Distributors.) (See page 271.)

Everything is listed under the NOUN or principal word

AUTOMOBILE AND CARRIAGE

SAMPLES
UPON
REQUEST

CARPET

We Manufacture
Any width up to
54 inches Wool,
Worsted, Jute,
Horse Hair in any
grade and quality.

The Hirst-Roger Co.

Mfrs.
PHILA., PA.
Western Representative
JOS. H. AUSTIN CO.
28 E. Woodbridge St., Detroit, Mich.

Charles W. Poulson & Co.

Sole Selling Agent

Overbrook Carpet Co.
MILLS: PHILADELPHIA, PA.



Carpets for Automobiles

We now have a department especially
equipped to handle the business of the
automobile trade.

We will be glad to give you figures on
any style of carpet to be made to or-
der or we will submit various grades
for your approval.

We manufacture any width carpet up
to 72 inches.

For Prices and Information apply to
CHARLES W. POULSON & CO.
133 5th AVE.,
NEW YORK

AUTOMOBILE CARPETS

Highspire Auto Carpet.....	5 grades	Jute Velvet .4 grades
Round Wire Wool Tapestry	5 grades	Wool Velvet .7 grades
Round Wire Horsehair Tapestry .	8 grades	Moresque...7 grade

Special extra qualities of Wool Velvets
in complete line of colorings

Used and endorsed by manufacturers who demand the best in
Automobile Carpets

FURNISHED IN ANY WIDTH DESIRED
SAMPLES AND PRICES UPON REQUEST

C. H. MASLAND & SONS

Manufacturers, Carlisle and Philadelphia, Pa.

W. & J. SLOANE

Sole Selling Agents, 575 Fifth Avenue, New York

Please mention The Automobile Trade Directory

CARPET, Coach (Continued)

Mohawk Carpet Mills. (McCreary, Wallin & Crouse Branch.)—See Sloan, W. & J.

Overbrook Carpet Co.—See Poulson & Co.

Poulson & Co., Charles W., 133 Fifth Ave., New York, N. Y. (Sole Distributors for Overbrook Carpet Co., Philadelphia, Pa.) (See page 199.)

Schofield, Mason & Co., Fairhill, Reese & Cumberland Sts., Philadelphia, Pa.

Sloane, W. & J., 573 Fifth Ave., New York, N. Y. (Sole Distributors for C. H. Masland & Sons, Carlisle, Pa.) "High-spire," "Amber," also Mohawk Carpet Mills. (McCreary, Wallin & Crouse Branch, Amsterdam, N. Y.) (See pages 199 and 585.)

Strongtex—See Strong Textile Co.

Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)

CARPET MATS—See Mats, Carpet; also Carpet

CARPET TRIMMINGS—See Trimmings, Cloth and Carpet

CARRIAGE BOLTS—See Bolts, Machine

CARRIERS, LUGGAGE—See Racks, Trunk; also Bags, Coat Rail; also Holders, Suit Case; also Trunks

CARRIERS, Motorcycle Luggage

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Shillan, Beck & Co., 68 E. 131st St., New York, N. Y.

CARRIERS, Storage Battery

A. G.—See Battery Equipment & Supply Co. American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. (See page 659.)

Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. "A. G." (See page 201.)

Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (See page 177.)

CARRIERS, TIRE—See Holders, Tire.

CARS, Motorcycle Side, Fore and Rear

Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.

Cynet Mfg. Co., 41 Perry St., Buffalo, N. Y. Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "Rogers." (See page 843.)

Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill. "Henderson."

Flexible Co., Loudonville, O.

Harley-Davidson Motor Co., 3731 Chestnut St., Milwaukee, Wis.

Hastings Mfg. Co., Goshen, Ind. "National." Henderson—See Excelsior Motor Mfg. & Supply Co.

National—See Hastings Mfg. Co.

Rogers—See Ero Mfg. Co.

Side Car Co., Loudonville, O.

CASE-HARDENING—See Treating, Heat

CASE-HARDENING COMPOUNDS—See Compounds, Case-Hardening

CASE-HARDENING FURNACES—See Furnaces, Annealing

CASE-HARDENING MATERIALS—See Compounds, Case-Hardening

CASES, ACCIDENT—See Cases, Medical Emergency

CASES, BATTERY—See Boxes, Battery

CASES, Bolt and Screw

(See also Cabinets, Accessory)

American Bolt & Screw Case Co., Davies Bldg., Dayton, O.

H-B—See Hobart Bros. Co.

Heller & Co., W. C., Wabash Ave., Montpelier, O.

Hobart Bros. Co., Troy, N. Y. "H-B."

New Britain Machine Co., Chestnut St., New Britain, Conn.

Stevens & Co., 375 Broadway, New York, N. Y. (Distributors.) (See page 201.)

CASES, BULB—See Cases, Extra Lamp Bulb

CASES, CARD—See Cases, Toilet

CASES, Curtain, for Fords

(Leather or fabric bags or cases for carrying top or storm curtains)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 237-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)

CASES, EMERGENCY—See Cases, Medical Emergency

CASES, Extra Lamp Bulb

(Cases or boxes for carrying spare lamp bulbs on car.) Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.

Campbell—See Perkins-Campbell Co.

Connecticut Telephone & Electric Co., Meriden, Conn.

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 421.)

Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Everything is listed under the NOUN or principal word

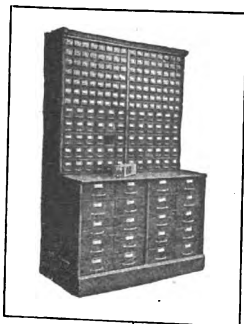
Besco Equipment and Supplies

for the Battery Service Stations

Including Moulds, Burning Racks, Post Builders, Post Cutters and Reducers, Cadmium Meter and Leads, and many more essential tools

BATTERY EQUIPMENT & SUPPLY CO.
1458 Michigan Ave. Write for latest Catalogue No. 3 CHICAGO, ILL.

How About You?

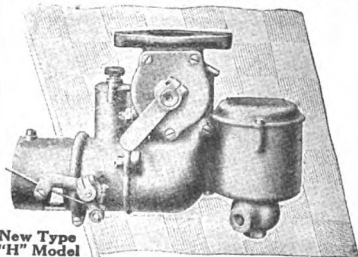


GET headed toward a bigger business by improving your service with HELLER SERVICE SECTIONS. Over 1,000 stores, shops and garages equipped. Build as you grow, add section at a time. Ask for Catalog 37-R.

STEVENS & COMPANY
375 Broadway New York

Miller Carburetors

Recognized Champion of the World



New Type
"H" Model

Made by

Harry A. Miller Mfg. Co.
Incorporated

Factory and General Office
Seventeenth and Los Angeles Streets
LOS ANGELES, U. S. A.

"HOYT" BRONZE BACK BABBITT LINED BEARINGS

For Automobile, Truck and Tractor Motors

The largest and most representative manufacturers are using our product.
Please send us your blueprints for estimate.

General Offices: **HOYT METAL COMPANY**

ST. LOUIS, MO

Please mention The Automobile Trade Directory

CASES, LAMP—See Cases, Extra Lamp Bulb

CASES, LUGGAGE, FOR FORDS — See Bags, Luggage

CASES, LUNCHEON—See Hampers, Touring

CASES, Medical Emergency

First Aid Equipment Co., 16 E. 33d St., New York, N. Y.

Wilford Hall Laboratories, Portchester, N. Y.

CASES, PLUG—See Cases, Spark Plug

CASES, SCREW—See Cases, Bolt and Screw

CASES, SPARK COIL—See Boxes, Spark Coil

CASES, Spark Plug

(Leather or Fabric cases for holding spare plugs)

Algo—See Auburn Leather Goods Co.

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algo."

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Campbell—See Perkins-Campbell Co.

Clifton Mfg. Co., 323-37 Pleasant St., Waco, Texas.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 845.)

Nathan Novelty Mfg. Co., 56 Fifth Ave., New York, N. Y. (See page 313.)

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Powers Mfg. Co., Waterloo, Iowa. (See page 581.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 333.)

Stephens Rubber Co., A. J., 1437 Chestnut St., Kansas City, Mo.

CASES, TIRE—See Covers, Spare Tire

CASES, Toilet and Card

(For Motorhomes or other closed cars)

Art Work Shop, 825-36 E. Ferry St., Buffalo, N. Y. (See page 495.)

Cowles & Co., C., New Haven, Conn.

Kraft & Sons, Theo., 458 W. Broadway, New York, N. Y.

Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Rumple & Sons, C. F., Fifth & Cherry Sts., Philadelphia, Pa.

Seco—See Spielman Electric Co.

Shepard Art Metal Co., Detroit, Mich. (See page 481.)

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.)

(See page 253.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

CASINGS, RADIATOR—See Hoods, Radiator

CASES, TOOL—See Bags, Tools; also Boxes, Tool

CASES, TUBE—See Covers, Spare Tire

CAST IRON CEMENT—See Cement, Cast Iron

CAST STEEL WHEELS—See Wheels, Cast Steel

CASTINGS, Aluminum

Acme Brass Works, 3211 Collins Ave., Detroit, Mich.

Acme Works, Indianapolis, Ind.

Active Castings Co., 1008 Maple St., Detroit, Mich.

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 561.)

Adlake—See Adams & Westlake Co.

Adrian Brass & Aluminum Casting Co., Adrian, Mich.

Aetna Brass & Bronze Co., 1631-35 E. 58th St., Cleveland, O.

Albrass Co., Coxsackie, N. Y.

Alloy Foundry & Machine Corp., 73 Cedar St., New Rochelle, N. Y.

Aluminite—See Green Engineering Co.

Aluminum Manufacturers, Inc., 6105 Carnegie Ave., Cleveland, O. "Lynite."

Aluminum Foundry Co., Bauch St., Sebring, O. American Brass & Iron Co., Detroit, Mich. (See page 205.)

American Bronze Co., 90-108 Arthur St., Buffalo, N. Y.

American Foundry Co., 634 S. 11th St., Newark, N. J.

American Non-Ferrous Metals Corp., Chester, Pa.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anderson Foundry Co., Wm. B., 24-30 E. Clinton St., Chicago, Ill. "W. B."

Ashland Brass Foundry, Virginia Ave., Ashland, O.

Atlas Brass Foundry Co., Columbus, O. (See page 603.)

Auto Products Co., Station H, Cincinnati, O. (See page 156.)

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Bayer Foundries Co., 4067 Park Ave., St. Louis, Mo.

Beacon Bronze Co., Beacon, N. Y. "Tonite." (See page 563.)

Bears Iron & Wire Works, 294-96 Taaffe Pl., Brooklyn, N. Y.

Bergen Point Brass Foundry, 161 Hobart Ave., Bayonne, N. J.

Blake, Edwin J., 565 Windsor St., Hartford, Conn.

Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.

Brass & Bronze Castings Co., 6515 Carnegie Ave., S. E., Cleveland, O.

Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.

Brown Bros., 46-48 Garden St., Stamford, Conn.

Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Elgrade."

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 179.)

Everything is listed under the NOUN or principal word



Choosing the Bearing

In solving this all-important problem of motor design, remember this—

If you choose Ring True Bearings you will feel safe in knowing that you are using the bearing which has been selected by a large majority of all the manufacturers of motor cars in this country.

You will be using the bearing which made good in the Liberty Motor and helped to win practically every motor car and airplane speed and endurance contest during recent years.

You will be using the bearing made in the largest motor bearing manufacturing plant in the world.

You will be assisted by the Ring True engineering staff—the largest and most experienced group of bearing experts in the country.

GENERAL ALUMINUM & BRASS MFG. CO.

Makers of Bronze Back Babbitt Lined Bearings, Aluminum and Brass Castings.

DETROIT, U. S. A.

Please mention The Automobile Trade Directory

CASTINGS, Aluminum (Continued)

- C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 97.)
- Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
- Champion Brass Works, Coldwater, Mich. (See page 311.)
- Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
- Cincinnati Aluminum Casting Co., Cincinnati, O. "Lumite."
- City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.
- City Brass Foundry Co., 5313 St. Clair Ave., N. E., Cleveland, O.
- Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 1003.)
- Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.
- Cochrane Brass Foundry Co., S. Richland Ave. & No. Central Tracks, York, Pa.
- Columbia Castings Co., 111 Ferdinand Ave., Detroit, Mich.
- Columbus Brass Co., 540 Dublin Ave., Columbus, O.
- Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.
- Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 393.)
- Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)
- D'Este Co., Julian, 26 Canal St., Boston, Mass.
- Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
- Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.
- Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.
- Electric Materials Co., North East, Pa.
- Ellison Brass Mfg. Co., Jamestown, N. Y.
- Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 231.)
- Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.
- Eureka Co., North East, Pa.
- Farley Mfg. Co., 624 N. Union St., Decatur, Ill.
- Federal Signal Co., Albany, N. Y.
- Fischer-Sweeny Bronze Co., 13th & Grand Sts., Hoboken, N. J.
- Fitz Water Wheel Co., Penn St. & Penna. R. R., Hanover, Pa.
- Foster Brass Foundries, 815 Vernal St., Cedar Rapids, Ia.
- Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
- G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.
- Gallagher's Sons, James, 87 Centre St., New York, N. Y.
- General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)
- General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenite." (See page 219.)
- General Castings Co., Ford Bldg., Detroit, Mich.
- General Railway Signal Co., Rochester, N. Y.
- Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.
- Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 197.)
- Globe Brass Works, 1212 W. Liberty St., Cincinnati, O.
- Graham & Co., James, 293 Wooster St., New Haven, Conn.
- Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."
- Griswold Mfg. Co., 1055 W. 12th St., Erie, Pa.
- Hampden Brass Co., Springfield, Mass.
- Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 837.)
- Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 415.)
- Harsch Bronze & Foundry Co., John, 11612 Madison Ave., Cleveland, O.
- Herculite—See Levett Co.
- Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
- Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.
- Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.
- Hoffman Bronze & Aluminum Casting Co., 938 Addison Rd., Cleveland, O.
- Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.
- Howard Metal Co., Second & Canal Sts., Reading, Pa.
- I B C—See Indianapolis Brass Co.
- Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. (See page 205.)
- Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
- Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind. "I B C."
- J. W. R.—See Richardson Foundry & Metals Corp.
- Jefferson Brass Foundry, 209-11 King St., Brooklyn, N. Y.
- Jonah & George, Little's Ct., Merrimack, Mass.
- Johnson Bronze Co., New Castle, Pa. (See page 181.)
- Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.
- K & M Brass & Aluminum Castings Co., 10611-13 Quincy Ave., Cleveland, O.
- Kauffman Metal Parts Co., Bellefontaine, O.
- Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
- Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
- Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.
- Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.
- Lalor Fuel Oil System Co., 527-33 Colvin St., Baltimore, Md.
- Levering Bros., 200 Key Highway, Baltimore, Md.
- Levett—See Levett Co.
- Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. "Magnalite," "Levettal," "Herculite."
- Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
- Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.
- Lough Bros., 90 West St., New York, N. Y. (See page 207.)
- Lumite—See Cincinnati Aluminum Casting Co.
- Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.
- Lynite—See Aluminum Castings Co.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- Machinists Foundry Co., Tenth St. & Macedonia Ave., Muncie, Ind.

Everything is listed under the NOUN or principal word

The
HARLEY COMPANY

Office and Works—Page Boulevard

SPRINGFIELD · MASSACHUSETTS · U. S. A.

Founders and Manufacturers of
Aluminum, Bronze, Brass,
Copper and Composition
Castings

DROP FORGERS

Manufacturers of
CASKET HARDWARE

"Where Quality Is More Than a Word"

*"Whatever you want,
Whenever you want it."*

In
SPECIAL BRASS GOODS

Contract Work a Specialty

The Sign of



QUALITY

SERVICE

We make all kinds of special work in
Brass, Bronze or Aluminum
Machined complete to blue-print,
sketch or sample.

Send us your inquiries

Send for our illustrated folder, "The
Story of a Growing Plant."

American Brass & Iron Co.
Detroit Mich.

VITA-LOY

(BRONZE)

FOR HIGH SPEED BEARINGS

VITA-LITE

(ALUMINUM)

LIGHT - STRONG - DURABLE

CASTINGS

BRASS BRONZE ALUMINUM

PRODUCTION WORK — ANY SIZE OR WEIGHT
SEND B/P OR SAMPLE CASTING FOR ESTIMATE

THE IDEAL BRONZE CO.

CLEVELAND 1265-67-69 EAST 55th ST. OHIO

Please mention The Automobile Trade Directory

CASTINGS, Aluminum (Continued)

Magnalite—See Levett Co.
 Maluminum Castings Co., 1116-20 E. Georgia St., Indianapolis, Ind.
 Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.
 Michaels Bronze Co., 220-40 Scott St., Covington, Ky.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 Moak Machine & Tool Co., 3547 Connors St., Port Huron, Mich.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Monumental Bronze Co., 354 Howard St., Bridgeport, Conn.
 Morris Metal Products Corp., 300 Union Ave., Bridgeport, Conn.
 Mueller Metals Co., Lapier Ave., Port Huron, Mich.
 Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
 Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.
 Nabralco—See National Bronze & Aluminum Foundry Co.
 National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
 National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.
 National Bronze & Aluminum Castings Co., 3530-60 Garfield Ave., Detroit, Mich.
 National Bronze & Aluminum Foundry Co., 3539 E. 19th St., Cleveland, O. "Nabralco."
 Neptune Meter Co., 50 E. 43d St., New York, N. Y.
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
 Oberdorfer Brass Co., M. L., 304 E. Water St., Syracuse, N. Y.
 Ohio Pattern Works & Foundry Co., Cincinnati, O.
 Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.
 Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y.
 Pioneer Brass Works, 418-24 S. Penn St., Indianapolis, Ind.
 Pittsburgh Brass Mfg. Co., 32d St. & Penn Ave., Pittsburgh, Pa.
 Pottstown Brass Works, Pottstown, Pa.
 Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
 Pre. Road Foundries, Lake & Crown Sts., Bloomfield, N. J.
 Providence Brass & Aluminum Foundry, 400 Eddy St., Providence, R. I.
 Racine Aluminum & Brass Foundry Co., 1239 13th St., Racine, Wis.
 Reeves & Co., Paul S., 1415-35 Catharine St., Philadelphia, Pa.
 Regal Brass Foundry Co., 73 E. Larned St., Detroit, Mich.
 Richardson Foundry & Metals Corp., J. W., 1066 62nd St., Brooklyn, N. Y. "J. W. R."
 Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
 Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.
 Ring True—See General Aluminum & Brass Mfg. Co.
 Ross Machine Co. (Wollaston), Quincy, Mass.
 Rostand Mfg. Co., Milford, Conn.
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.

"S-C" Regulator Co., Perry & High Sts., Fostoria, O.
 Sayre Stamping Co., Lookhart Bldg., Sayre, Pa.
 Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
 Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
 Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
 Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
 Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.
 Standard Brass & Iron Works, 1830 St. Paul Ave., Milwaukee, Wis.
 Standard Brass Foundry Co., 390 E. 67th St., Cleveland, O.
 Standard Foundry Co., Hartford, Conn.
 Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
 Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
 Sterling Sales Co., Auburn, Ind.
 Stiles Mfg. Co., St. Louis, Mo.
 (See page 527.)
 Sunderman Corp., Newburgh, N. Y.
 (See page 393.)
 Superior Brass Works, 250 Brush St., Detroit, Mich.
 Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
 T. B. C.—See Titanium Bronze Co.
 Tenite—See General Bronze Foundry Co.
 Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
 Tolonite—See Beacon Bronze Co.
 Unique Brass Foundry Co., 333-41 Grant St., Buffalo, N. Y.
 United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
 United Bronze Co. of Pittsburgh, Pittsburgh, Pa.
 Verillite Metals Co., 438 E. Girard Ave., Philadelphia, Pa.
 Victoria Metal Co., 322-36 E. Eighth St., Erie, Pa.
 W. B.—See Anderson Foundry Co.
 Walsh, James F., 33 N. Clinton St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Weber-Knapp Co., Jamestown, N. Y.
 Wellman Bronze Co., 6017 Superior Ave., Cleveland, O.
 Werner—General Bronze Foundry Co.
 Werra Aluminum Foundry Co., Waukesha, Wis.
 Western Brass Mfg. Works, Marshall Blvd., 21st St., Chicago, Ill.
 (See page 263.)
 Wilco Co., 172 Griswold St., Detroit, Mich.
 (Distributors.) (See page 207.)
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 83.)
 Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
 Wisconsin Aluminum Foundry Co., 16th & Franklin Sts., Manitowish, Wis.
 Wolkow & Sons, F., 138 W. Market St., Louisville, Ky.
 York Hardware & Brass Works, 501-50 E. Market St., York, Pa.

CASTINGS, BRASS—See Castings, Bronze and Brass

Everything is listed under the NOUN or principal word

CASTINGS

Gray Iron
Malleable
Steel

Brass
Bronze
Aluminum

All sizes and weights, Rough or machined.

DIE CASTINGS

in Aluminum, Brass, Zinc, Tin and Lead Alloys

DROP FORGINGS STAMPINGS

Heavy or Light gauge

Contract Manufacturing

Extensive Facilities
Quantity Production Prompt Service

Lough Brothers
90 West St., New York

CASTINGS

Malleable

STEEL, GRAY IRON, BRASS,
BRONZE, ALUMINUM

Production and delivery guaranteed.
All sizes and weights machined if desired.

Specializing in CASTINGS for Automobiles, Trucks and Tractors.

PATTERNS

WOOD AND METAL

Production Patterns for Machines

MODEL BUILDING

Send Us Your Drawings

REPAIR PARTS

We are the exclusive owners of all Patterns, Tracings and Records from which correct Parts are made and furnished for

**HORNER & GRABOWSKY
TRUCKS**

THE WILCO CO.

172 Griswold Street
DETROIT, MICH.

Let Us Figure on Your Requirements.
Mail Blue Prints for Prices.

CASTINGS

ALUMINUM BRONZE

90CU—10AL

"The Metal With Merit"

Die Castings—Sand Castings

Avail Yourself of the Wonderful
Physical Properties of This Alloy

Particulars on Request

Buffalo Bronze Die Cast Corporation
Die Casters—Brass Founders

100 Arthur Street

TRADE



MARK

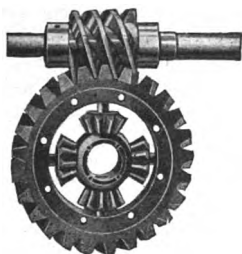
Buffalo, N. Y.

Please mention The Automobile Trade Directory

CASTINGS, Bronze and Brass

- Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
- Active Castings Co., 1008 Maple St., Detroit, Mich.
- Adamant—See Cincinnati Aluminum Casting Co.
- Adams & Westlake Co., Chicago, Ill.
- "Adlake," (See page 561.)
- Adlake—See Adams & Westlake Co.
- Adrian Brass & Aluminum Casting Co., Adrian, Mich.
- Advance Brass Mfg. Co., E. Western Ave., Muskegon, Mich.
- Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
- Albrass Co., Coxsackie, N. Y.
- Aluminum Manufacturers, Inc., 3205 Carnegie Ave., Cleveland, O. "Lynux."
- American Brass Products Co., Pottstown, Pa.
- American Brass & Iron Co., Detroit, Mich. (See page 205.)
- American Bronze Corp., Berwyn, Pa. (See page opposite Inside Front Cover.)
- American Bronze Co., 99-103 Arthur St., Buffalo, N. Y.
- American Foundry Co., 634 S. 11th St., Newark, N. J.
- American Manganese Bronze Co. (Holmesburg), Philadelphia, Pa.
- American Non-Ferrous Metals Corp., Chester, Pa.
- American Safety Lamp & Mine Supply Co., 1300 Capouse Ave., Scranton, Pa.
- Amesbury Brass & Foundry Co., Amesbury, Mass.
- Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "W. B."
- Ansonia Mfg. Co., Ansonia, Conn.
- Arbuckle & Co., Rushville, Ind.
- Artistic Bronze Co., 2050 Fairfield Ave., Bridgeport, Conn.
- Ashland Brass Foundry, Virginia Ave., Ashland, O.
- Atlas Brass Foundry Co., Columbus, O. (See page 603.)
- Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
- Auto Products Co., Station H, Cincinnati, O. (See page 159.)
- Bassick Co., Bridgeport, Conn. (See page 323.)
- Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1063.)
- Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
- Bayer Foundries Co., 4067 Park Ave., St. Louis, Mo.
- Beacon Bronze Co., Beacon, N. Y. "Boronite." (See page 563.)
- Bergen Point Brass Foundry, 161 Hobart Ave., Bayonne, N. J.
- Blake, Edwin J., 555 Windsor St., Hartford, Conn.
- Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.
- Boronite—See Beacon Bronze Co.
- Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
- Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.
- Brown Bros., 46-48 Garden St., Stamford, Conn.
- Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, Ohio.
- Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
- Buermann Mfg. Co., August, 220 Jelliff Ave., Newark, N. J. "Star."
- Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 207.)
- Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Higrade."
- Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 179.)
- C. & C. Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 97.)
- Cantrell Edw. & Tool Co., Reading, Pa.
- Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
- Carter, E. T., Plainville, Conn.
- Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.
- Central Brass Foundry, 1229 W. Randolph St., Chicago, Ill.
- Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
- Champion Brass Works, Coldwater, Mich. (See page 311.)
- Chapman Co., Berlin, Wis.
- Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill.
- Cincinnati Aluminum Casting Co., Cincinnati, O. "Adamant."
- City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.
- City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.
- Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 1003.)
- Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.
- Cochrane Brass Foundry, S. Richard Ave. & N. Central Tracks, York, Pa.
- Cochrane Brass & Mfg. Co., J. A., 1403 E. 40th St., Cleveland, O.
- Columbia Castings Co., 111 Ferdinand Ave., Detroit, Mich.
- Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y.
- Columbus Brass Co., 540 Dublin Ave., Columbus, O.
- Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
- Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.
- Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 393.)
- Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)
- Crescent Brass Mfg. Co., 301 S. Seventh St., Reading, Pa.
- Dayton Bronze Bearing Co., 916-18 E. Third St., Dayton, O.
- D'Este Co., Julian, 26 Canal St., Boston, Mass.
- Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
- Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.
- Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.
- Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.
- Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
- Eagle—See Stillman White Foundry Co.
- Efemco—See Foster, Merriam & Co.
- Electric Materials Co., North East, Pa.
- Elephant—See Phosphor Bronze Smelting Co.
- Ellison Brass Mfg. Co., Jamestown, N. Y.

Everything is listed under the NOUN or principal word



Cramp's Super-Strength Gear Bronze

**A Better Gear Bronze
at No Increase in Price**

Never before, we believe, has there been perfected a single type of metal so clearly entitled to receive the unbounded confidence of automotive engineers. This is due to its tensile strength and wearing qualities, enabling it to better withstand the gruelling test of heavy load combined with unexpected thrusts and sudden shocks.

Government Tests on Forgings of This Metal Show

Tensile Strength.....122,000 Lbs. Per Sq. In.
Elastic Limit Under Tension..... 89,000 Lbs. Per Sq. In.
Elastic Limit Under Compression... 58,000 Lbs. Per Sq. In.
Permanent Set at 100,000 Lbs. on 1 In. Cube..... .014 In.

Brinell Tests on Gear Blanks of This Metal Have Shown:

On Castings, a Brinell Hardness of No. 250

On Forgings, a Brinell Hardness of No. 275

This bronze is the result of 90 years' experience in building machinery of all kinds. We can supply it in the form of forged or cast blanks or gear wheels machined and hobbled complete, including the furnishing of the steel worms—ready for installation.

We would like to hear from automobile and axle makers who are looking for better bronze at no increase in price.

**Wm. Cramp & Sons
Ship and Engine
Building Co.**

PHILADELPHIA, - PA.



Please mention The Automobile Trade Directory

CASTINGS, Bronze and Brass (Continued)

- Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Erie Bronze Co., 333 W. 19th St., Erie, Pa. (See page 231.)
 Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.
 Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.
 Eureka Co., North East, Pa.
 Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
 Farley Mfg. Co., 624 N. Union St., Decatur, Ill.
 Federal Bearing & Bushing Corp., Detroit, Mich. (See page 861.)
 Federal Signal Co., Albany, N. Y.
 Fischer-Sweeney Bronze Co., 13th & Grand Sts., Hoboken, N. J.
 Fitz Water Wheel Co., Penn St. & Penna. R. R., Hanover, Pa.
 Flannery Co., P. J., 33 Whiting St., New Britain, Conn.
 Flour City Ornamental Iron Co., Minneapolis, Minn.
 Fore River Shipbuilding Corp., Quincy, Mass.
 Foster Brass Foundries, 315 Vernal St., Cedar Rapids, Ia.
 Foster, Merriam & Co., Meriden, Conn. "Etemco." (See page 309.)
 Frontier Brass Foundry, 315 Elmwood Ave., Niagara Falls, N. Y.
 G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.
 Gallagher's Sons, James, 37 Centre St., New York, N. Y.
 General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)
 General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenax." (See page 219.)
 General Castings Co., Ford Bldg., Detroit, Mich.
 General Railway Signal Co., Rochester, N. Y.
 Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.
 Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 197.)
 Globe Brass Works, 1212 W. Liberty St., Cincinnati, O.
 Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.
 Hampden Brass Co., Springfield, Mass.
 Hansen & Olson Co., 508 E. Green St., Chicago, Ill. (See page 337.)
 Hardy & Sons Co., Wm. A., Fitchburg, Mass.
 Harley Co., Springfield, Mass. (See pages 205 and 415.)
 Harper, Thomas, 204 Lafayette St., New York, N. Y.
 Harsch Bronze & Foundry Co., John, 11613 Madison Ave., Cleveland, O.
 Hart Co., Williamsport, Pa.
 Henry-Bonnard Bronze Co., Washington St., Mt. Vernon, N. Y.
 Herculite—See Levett Co.
 Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
 Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.
 Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.
 Hoffman Bronze & Aluminum Casting Co., 993 Addison Rd., Cleveland, O.
 Homer Brass Works, 231 Race St., Philadelphia, Pa.
 Hotz Foundry & Mfg. Co., Wolf Ave., Fremont, O.
 Howard Metal Co., Second & Canal Sts., Reading, Pa.
 I B C—See Indianapolis Brass Co.
 I. N. Co.—See Monel Metal Products Corp.
 Ideal Bronze Co., 1263-69 E. 53th St., Cleveland, O. (See page 205.)
 Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind. "I B C."
 Ives Co., H. B., 5-17 Artisan St., New Haven, Conn.
 J. W. R.—See Richardson Foundry & Metals Corp.
 Jefferson Brass Foundry, 309-11 King St., Brooklyn, N. Y.
 Johnson Bronze Co., New Castle, Pa. (See page 181.)
 Jonah & George, Little's Ct., Merrimac, Mass.
 Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.
 K & M Brass & Aluminum Castings Co., 10611-13 Quincy Ave., Cleveland, O.
 Kauffman Metal Parts Co., Bellefontaine, O.
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
 Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.
 Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.
 Lakewood Screw Machine Products Co., Cleveland, O.
 Lator Fuel Oil System Co., 527-28 Colvin St., Baltimore, Md.
 Langsenkamp-Wheeler Brass Works, 1206-28 Shelby St., Indianapolis, Ind.
 Lebanon Brass Mfg. Co., Lebanon, Pa.
 Leitt Bros., 7725 S. Chicago Ave., Chicago, Ill.
 Levering Bros., 300 Key Highway, Baltimore, Md.
 Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. "Magnalite," "Leavettal," "Herculite."
 Levettall—See Levett Co.
 Light Mfg. & Fdry. Co., Union & Queen Sts., Pottstown, Pa.
 Limerick Co., J. Arthur, 900 N. Howard St., Baltimore, Md.
 Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
 Lumen Bearing Co., Buffalo, N. Y. (See page 231.)
 Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.
 Lynux—See Aluminum Castings Co.
 McGill Metal Co., Valparaiso, Ind.
 McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
 Machinists Foundry Co., Tenth St. & Macedonia Ave., Muncie, Ind.
 Magnolite—See Levett Co.
 Malumunum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.
 Martin & Anson, 2226-23 Indiana Ave., Chicago, Ill.
 Maxwell Engineering Co., Rome, N. Y.
 Mead & Cross Co., 309 Lafayette St., New York, N. Y.
 Michaels Bronze Co., 230-40 Scott St., Covington, Ky.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 Milwaukee Valve Co., 129 Burrell St., Milwaukee, Wis.

Everything is listed under the NOUN or principal word

Chicago Malleable Castings Company

Malleable Castings
for
AUTOMOBILES
TRUCKS
TRACTORS

CERTIFIED QUALITY
PROMPT DELIVERY

Works: West Pullman, Ill.

District Sales Office:
718 Book Building
Detroit, Mich.

Die Cast Parts And Bearings

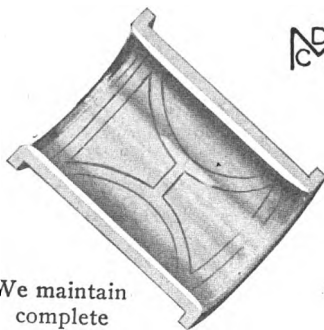


In
Tin
Lead
Zinc
and
Aluminum
Alloys

**NATIONAL LEAD
COMPANY**

111 Broadway, N. Y.

BRONZE BACK BABBITT LINED BEARINGS



We maintain
complete

BRASS FOUNDRY, MACHINE
SHOP and BABBITTING
DEPTS., devoted exclusively to
the manufacture of all classes of
AUTOMOBILE, TRUCK,
TRACTOR and STATIONARY
ENGINE BEARINGS.

Absolute cohesion of metals and
conformity to your specifications
guaranteed.

DIE MOULDED CASTINGS

Manufacturers are
constantly finding
new uses for our
DIE CASTINGS.
Send us samples
or blue prints
of your parts
and we will
gladly quote
you prices



**MILWAUKEE
DIE CASTING
COMPANY**

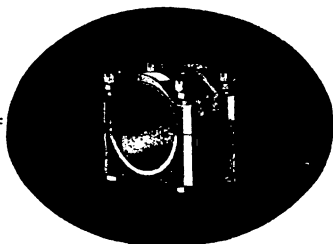
297 Fourth St., Milwaukee, Wisc.

Please mention The Automobile Trade Directory

CASTINGS, Bronze and Brass (Continued)

- Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
- Moline Iron Works, 228 Second St., Moline, Ill.
- Monel Metal Products Corp., Oak St., Bayonne, N. J. "I. N. Co."
- Monumental Bronze Co., 354 Howard St., Bridgeport, Conn.
- More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.
- Morris Metal Products Corp., 800 Union Ave., Bridgeport, Conn.
- Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
- Mt. Vernon Co., Mt. Vernon, N. Y.
- Mueller Metal Co., 238 Dyer St., Providence, R. I.
- Mueller Metals Co., Lapier Ave., Port Huron, Mich.
- Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
- Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.
- Nabralco—See National Bronze & Aluminum Foundry Co.
- National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
- National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.
- National Bronze & Aluminum Castings Co., 3530-60 Garfield Ave., Detroit, Mich.
- National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."
- Neptune Meter Co., 50 E. 42d St., New York, N. Y.
- New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.
- Niagara Brass Mfg. Co., Lockport, N. Y.
- Noite Brass Co., 27-29 W. Jefferson St., Springfield, O.
- Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.
- North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
- Northwestern Brass & Bronze Foundry, 4449-57 Humboldt Ave., Detroit, Mich.
- Oberdorfer Brass Co., M. L., 304 E. Water St., Syracuse, N. Y.
- Ohio Pattern Works & Foundry Co., Cincinnati, O.
- Onondaga Brass Co., Decker & Brown Sts., Syracuse, N. Y.
- Owosso Bronze Bearing Co., Owosso, Mich.
- Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y.
- Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.
- Pfau Mfg. Co., Cincinnati, O.
- Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant."
- Pioneer Brass Works, 413-24 S. Penn St., Indianapolis, Ind.
- Pittsburgh Brass Mfg. Co., 32d St. & Penn Ave., Pittsburgh, Pa.
- Pottstown Brass Works, Pottstown, Pa.
- Precision Castings Co., Syracuse, N. Y. (See page 219.)
- Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
- Pro. Econ. Foundries, Lake & Crown Sts., Bloomfield, N. J.
- Progressive Brass Foundry, Keowee & Herbert Sts., Dayton, O.
- Providence Brass & Aluminum Foundry, 460 Eddy St., Providence, R. I.
- Racine Aluminum & Brass Foundry Co., 1329 12th St., Racine, Wis.
- Railway & Industrial Engineering Co., People's Bank Bldg., Pittsburgh, Pa.
- Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.
- Regal Brass Foundry Co., 73 E. Larned St., Detroit, Mich.
- Richardson Foundry & Metals Corp., J. W., 1066 62nd St., Brooklyn, N. Y. "J. W. R."
- Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
- Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.
- Ring True—See General Aluminum & Brass Mfg. Co.
- Rome Locomotive & Machine Works, Rome, N. Y.
- Ross Machine Co. (Wollaston), Quincy, Mass.
- Rostand Mfg. Co., Milford, Conn.
- Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
- "S-C" Regulator Co., Perry & High Sts., Fostoria, O.
- Sani Products Co., 309 W. Randolph St., Chicago, Ill.
- Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
- Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
- Shambow Shuttle Co., Woonsocket, R. I.
- Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
- Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
- Smith Hardware Co., Frank F., 35 Clay St., Newark, N. J.
- Smith Mfg. Co., A. P., Norman & Lawrence Sts., East Orange, N. J.
- Spencer's Sons, I. S., Fair St., Guilford, Conn.
- Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
- Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.
- Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.
- Standard Brass & Iron Works, 1820 St. Paul Ave., Milwaukee, Wis.
- Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
- Standard Foundry Co., Hartford, Conn.
- Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
- Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
- Star—See Buermann Mfg. Co.
- Sterling Sales Co., Auburn, Ind.
- Sterling Specialty Co., New Comerstown, O.
- Stiles Mfg. Co., St. Louis, Mo. (See page 527.)
- Stillman White Foundry Co., 1 Bark St., Providence, R. I. "Eagle."
- Stowell Co., South Milwaukee, Wis.
- Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
- Sunderman Corp., Newburgh, N. Y. (See page 393.)
- Super-Refined Metals Co., 2631 Woodward Ave., Detroit, Mich. (See page 649.)
- Superior Brass Works, 250 Brush St., Detroit, Mich.
- Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
- Superior Engineering Works, Small Bldg., York, Pa.
- T. B. C.—See Titanium Bronze Co.
- Tenax—See General Bronze Foundry Co.
- Thiery & Kendrick Mfg. Co., Detroit, Mich. (See page 221.)
- Thomson Press Co., John, 253 Broadway, New York, N. Y.

Everything is listed under the NOUN or principal word



Used throughout the industry

A census of modern American automobiles and motor trucks would show few into which Doehler Die Castings had not been built. The last reckoning showed that over 80 per cent of the annual output of die-castings came from the big Doehler plants.

Quality is the outstanding reason for the general standardization on Doehler Die Castings. Manufacturers have learned by experience that anything less is not fully satisfactory. In the long run, Doehler Die Castings are not only most dependable, but also least expensive.

The die cast babbitt lined bearings pictured here are but one of hundreds of parts produced in quantity for the automotive industry. Bearings are made by thousands every month—babbitt lined bronze backs and the new aluminum backed type. Many parts formerly machined out are now made as "Do-Di" Finished Brass Castings.

The Company offers the advisory service of its engineering staff or is prepared to die-cast parts to your specifications.

Put your problem up to Doehler

THE WORLD'S LARGEST MANUFACTURERS OF DIE CASTINGS

DOEHLER DIE-CASTING CO.

BROOKLYN, N.Y.

TOLEDO, OHIO

CHICAGO, ILL.

SALES OFFICES IN ALL PRINCIPAL CITIES

DDC-25

CASTINGS, Bronze and Brass (Continued)

Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. Co."
 Truck Parts & Foundry Co., Alma, Mich.
 Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn.
 Twin City Forge & Foundry Co., Stillwater, Minn.
 Union Metal Works, Chelsea, Mass.
 Unique Brass Foundry Co., 333-41 Grant St., Buffalo, N. Y.
 United Brass & Aluminum Mfg. Co., Goulden St., Fort Huron, Mich.
 United Bronze Co. of Pittsburgh, Pittsburgh, Pa.
 Vanadium Metals Co., Vanadium Bldg., Pittsburgh, Pa. "Victor."
 Verilite Metals Co., 438 E. Girard Ave., Philadelphia, Pa.
 Victor—See Vanadium Metals Co.
 Victoria Metal Co., 332-36 E. Eighth St., Erie, Pa.
 W. B.—See Anderson Foundry Co.
 Walsh, James F., 33 N. Clinton St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Mfg. Co., 234 Grand St., Waterbury, Conn.
 Weber-Knapp Co., Jamestown, N. Y.
 Welbronco—See Wellman Bronze Co.
 Wellman Bronze Co., 6017 Superior Ave., Cleveland, O. "Welbronco."
 Wells Chemical Bronze Works, Temple & Harding Sts., Worcester, Mass.
 Werne—See General Bronze Foundry Co.
 Western Brass Mfg. Works, Marshall Blvd., 21st St., Chicago, Ill.
 (See page 263.)
 Western Pump Co., 423 Third St., Davenport, Ia.
 White Mfg. Co., Goshen, Ind.
 Wilco Co., 173 Griswold St., Detroit, Mich. (Distributors.) (See page 207.)
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 83.)
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.
 Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
 Wolkow & Sons, F., 123 W. Market St., Louisville, Ky.
 Woodruff & Sons Co., Walter W. Mount Carmel, Conn.
 York Hardware & Brass Works, 501-50 E. Market St., York, Pa.

CASTINGS, COMPOSITION—See Castings, Bronze and Brass

CASTINGS, Die

Acme Die-Casting Corp., Third Ave. & 35th St., Brooklyn, N. Y.
 (See page 219.)
 Alemitte Die Casting & Mfg. Co., 341-51 W. Chicago Ave., Chicago, Ill.
 American Bearing & Die Casting Corp., Indianapolis, Ind. (See page 267.)
 Barnhart Bros. & Spindler, 33 Throop St., Chicago, Ill. "Tenso."
 Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
 Bronze Die Casting Co., 929 Union Arcade, Pittsburgh, Pa.
 Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 207.)
 Burns-Croft Co., 2239 Herndon St., Chicago, Ill.

Die Casting Co. of New Jersey, 43 Sharon St., Irvington, N. J.
 Do-Di—See Doehler Die-Casting Co.
 Do-Lite—See Doehler Die-Casting Co.
 Doehler Die-Casting Co., Brooklyn, N. Y. "Do-Di," "Do Lite." (See page 213.)
 Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 231.)
 Franklin Die-Casting Corp., Gifford & Magnolia Sts., Syracuse, N. Y. (See page 215.)
 Fritz, Perry E., 2939 Sunrise St., Los Angeles, Cal.
 General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 203.)
 Grey Mfg. Co., C. M., 358 Central Ave., East Orange, N. J.
 Harley Co., Page Blvd., Springfield, Mass. (See pages 205 and 415.)
 Hoyt Metal Co., St. Louis, Mo. (See page 201.)
 Keystone Die Casting Co., 309 E. Main St., Norristown, Pa.
 Kidder-Oswald Co., Dayton, O.
 Kinite Co., 1333-40 St. Paul Ave., Milwaukee, Wis.
 Legler-Elberman Co., E. Bacon St., Dayton, O.
 Levering Bros., 300 Key Highway, Baltimore, Md.
 Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
 Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
 Marf Machine Co., 17-27 Vandewater St., New York, N. Y.
 Mead & Cross Co., 309 Lafayette St., New York, N. Y.
 Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 573.)
 Michigan Smelting & Refining Co., 7835 Jos. Campau Ave., Detroit, Mich.
 Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 211.)
 Modern Die & Tool Co., Indianapolis, Ind. "Victor." (See page 109.)
 Mogul Metal Co., Detroit, Mich. (See page 109.)
 Morris Metal Products Corp., 800 Union Ave., Bridgeport, Conn.
 Mt. Vernon Metal Products Co., Third Ave & Seventh St., Mt. Vernon, N. Y.
 Mueller Metals Co., Lapier Ave., Port Huron, Mich.
 Mussy-Lyon Co., Detroit, Mich. (See page 109.)
 National Lead Co., 111 Broadway, New York, N. Y. (See page 211.)
 Phoenix Die Casting Co., 21 Illinois St., Buffalo, N. Y.
 Precision Castings Co., Syracuse, N. Y. (See page 219.)
 Recording Devices Co., 554 W. Fifth St., Dayton, O.
 Ring True—See General Aluminum & Brass Mfg. Co.
 Sanford Co., David C., 33-39 Drouve St., Bridgeport, Conn.
 Sargent & Co., Water & Wallace Sts., New Haven, Conn.
 Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.
 Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill. (See page 297.)
 Stroh Die Moulded Casting Co., 161-71 Michigan St., Milwaukee, Wis.
 Tenso—See Barnhart Bros. & Spindler.
 United Bronze Co. of Pittsburgh, Pittsburgh, Pa.
 Universal Bearings Co., 845 Broadway, Lorain, O.

Everything is listed under the NOUN or principal word

FRANKLIN DIE-CASTINGS



*We cast in Aluminum, Tin,
Lead, and Zinc base alloys.*

*Send for booklet
"Franklin Die-Castings
in Many Fields."*

Serving the Accessory Manufacturer

There are few manufacturers of accessory devices who could not make good use of Franklin Die-Castings in their product.

Many manufacturers who supply the direct needs of the motorist with magnetos, lighting systems, tire pumps, etc. have found they could lower their costs and often raise the efficiency of their output simply by using Franklin Die-Castings. Likewise concerns which provide service men and dealers with electric valve grinders, drills and measuring pumps for oil and gasoline, have received the same benefits from the Die-Casting process.

It has been nearly thirty years since we originated the die-casting industry. Our long experience is valuable in the application of die-castings to individual problems.

FRANKLIN DIE-CASTING CORPORATION
Gifford and Magnolia Streets SYRACUSE, N. Y.

Please mention The Automobile Trade Directory

CASTINGS, Die (Continued)

Veeder Mfg. Co., 22 Sargeant St., Hartford, Conn. (See page 649.)
 Victor—See Modern Die & Tool Co.
 Victor Die Casting Machine Co., River St., Ypsilanti, Mich.
 Victoria Metal Co., 832-36 E. Eighth St., Erie, Pa.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y. (See page 389.)
 White Brass Casting Co., 1649 W. Grand Ave., Chicago, Ill.
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

CASTINGS, Grey Iron

Acme-Palmers & Dernooy Foundry Co., 5217 Sweeney Ave., Cleveland, O.
 Adamite—See Pittsburgh Iron & Steel Foundries Co.
 Advance Foundry Co., Dayton, O.
 Allene-Ryan Foundry Co., Aetna Rd. & E. 91st St., Cleveland, O.
 Almont Mfg. Co., Almont, Mich.
 American Car & Foundry Co., 5718 Russell St., Detroit, Mich.
 American Foundry & Mfg. Co., 11th & Herbert Sts., St. Louis, Mo.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
 Arbuckle & Co., Rushville, Ind.
 Arnold Co., Hoyt St., Norwalk, Conn.
 Atlantic Foundry Co., 182 Beaver St., Akron, O.
 Atlas Foundry Co., 181 S. Artillery Ave., Detroit, Mich.
 Atlas Foundry Co., Lyons Ave. & Colt St., Irvington, N. J.
 Auto Products Co., Station H., Cincinnati, O. (See page 109.)
 Automotive Foundry Co., La Crosse, Wis.
 Barker, James, Sixth & Cayuga Sts., Philadelphia, Pa.
 Barlow Foundry Co., 551 N. J. R. Ave., Newark, N. J.
 Barnes Foundry Co., Jersey City, N. J. (See page 219.)
 Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1063.)
 Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
 Bayer Foundries Co., 4067 Park Ave., St. Louis, Mo.
 Bemiller Foundry & Machine Co.—See Bekhouse & Co.
 Bowler Foundry Co., Columbus Rd., Cleveland, O.
 Brady Foundry Co., James A., 45th St. & Western Blvd., Chicago, Ill.
 Bridgeport Malleable Iron Works, Bridgeport, Conn.
 Brown Clutch Co., 1737 S. Camp St., Sandusky, O.
 Buch's Sons Co., A., Elizabethtown, Pa.
 Byram Foundry Co., 921 Biddle St., Indianapolis, Ind.
 C-W-C—See Campbell, Wyant & Cannon Foundry Co.
 Calhoun Casting Co., 119 South St., Battle Creek, Mich.
 Campbell Mfg. & Foundry Co., Muskegon, Mich.
 Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. "C-W-C." (See page 217.)

Cantrell Hdw. & Tool Co., Reading, Pa.
 Challenge Machinery Co., Grand Haven, Mich.
 Chapman Co., Berlin, Wis.
 Cheney & Son, S., Manlius, N. Y.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
 City Brass Foundry Co., 5310 St. Clair Ave., N. E., Cleveland, O.
 Clayville Iron Foundry & Machine Co., Clayville, N. Y.
 Cochran Brass Foundry, S. Richland Ave. & N. Central Tracks, York, Pa.
 Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.
 Connersville Foundry Co., 18th & Columbia Sts., Connersville, Ind.
 Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
 Detroit Foundry Co., 2642 E. Grand Blvd., Detroit, Mich.
 Detroit Gray Iron Foundry Co., 6403-23 Wight St., Detroit, Mich.
 Devlin Mfg. Co., Thos., Third & Lehigh Aves., Philadelphia, Pa.
 Dutchess Foundry Co., 56-60 Pine St., Poughkeepsie, N. Y.
 Eagle Foundry Co., Willard & Liberty Sts., Muncie, Ind.
 Eastern Malleable Iron Co., Naugatuck, Conn.
 Bekhouse & Co., Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Bellville, O.) (See page opposite Title Page.)
 Efemco—See Foster, Merriam & Co.
 Enterprise Foundry Co., 6463 E. Warren Ave., Detroit, Mich.
 Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.
 Fairmount Foundry, 15th & Indiana Ave., Philadelphia, Pa.
 Fanner Mfg. Co., Brookside Park, Cleveland, O.
 Farrar & Trefts, Perry & Illinois Sts., Buffalo, N. Y.
 Fay-Kultgen Foundry Co., E. Broad St., St. Joseph, Mich.
 Federal Signal Co., Albany, N. Y.
 Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.
 Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
 Flannery Co., P. J., 33 Whiting St., New Britain, Conn.
 Flour City Ornamental Iron Co., Minneapolis, Minn.
 Forest City Foundry & Mfg. Co., Cleveland, O.
 Foster, Merriam & Co., Dept. 5, Meriden, Conn. "Efemco." (See page 809.)
 Foundry & Machine Products Co., 2263 Fordyce Ave., Detroit, Mich.
 France Foundry & Machine Co. (N. Baltimore), Baltimore, O.
 Fremont Foundry Co., Fremont, O.
 Frontier Iron Works, 36 Letchworth St., Buffalo, N. Y.
 Fulton Foundry & Machine Co., 25 Furman St., Brooklyn, N. Y.
 G. & R. Foundry & Machine Co., 6½ St. & Penn R. R., Terre Haute, Ind.
 Gale Mfg. Co., Albion St., Albion, Mich.
 General Railway Signal Co., Rochester, N. Y.
 Gillespie Eden Corp., 21st Ave., Paterson, N. J.
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for Almont Castings.) (See page 853.)
 Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.

Everything is listed under the NOUN or principal word

C—W—C

MOTOR CASTINGS

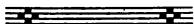
A Foundry Operated by a Practical Organization with Latest Equipment

Our reputation for uniform metal, uniform measurements, uniform production and uniform weight insures our customers the maximum production from their machine tool equipment at minimum cost.

Our organization is complete in all departments, including chemical laboratory, pattern shop and machine shop.

Daily Capacity 500 Tons

Intricate Designs Our Specialty
Send Us Your Inquiries



CAMPBELL, WYANT & CANNON
FOUNDRY COMPANY
MUSKEGON, MICH.

CASTINGS, Grey Iron (Continued)

- Great Lakes Foundry Co.**, 30th & Moak Sts., Port Huron, Mich.
- Griswold Mfg. Co.**, 1055 W. 12th St., Erie, Pa.
- Hart-Parr Co.**, Lawler St., Charles City, Ia.
- Holmes Foundry Co.**, (South Port Huron), Port Huron, Mich.
- Holyoke Motor Foundry Co.**, Holyoke, Mass.
- Hood Furnace & Supply Co.**, Corning, N. Y.
- Illinois Malleable Iron Co.**, 1801-25 Diversey Blvd., Chicago, Ill.
- Indiana Foundry Co.**, Tenth & Liberty Sts., Muncie, Ind.
- Industrial Foundry Co.**, St. Johns, Mich.
- Inland Steel Casting Co.**, 19th & Cedar Sts., Terre Haute, Ind.
- Interstate Foundry Co.**, E. 61st St. & Roland Ave., Cleveland, O.
- Iron City Foundry Co.**, Hamilton, O.
- Johnson & Co.**, Isaac G., Spuyten Duyvil, New York, N. Y.
- Kauffman Metal Parts Co.**, Bellefontaine, O.
- Kennedy Foundry Co.**, Charles & Wells Sts., Baltimore, Md.
- L. N. N. Foundry**, Cleveland, O.
- Lakey Foundry & Machine Co.**, First & Water Sts., Muskegon, Mich.
- Lakewood Screw Machine Products Co.**, Cleveland, O.
- Lansdale Foundry Co.**, Lansdale, Pa.
- Lansing Foundry Co.**, Hazel & Hosmer Sts., Lansing, Mich.
- Levering Bros.**, 200 Key Highway, Baltimore, Md.
- Lipman Pump Works**, 100 Shirland Ave., Beloit, Wis.
- Long Island Foundry Co.**, 11th St. & East Ave., Long Island City, N. Y.
- Lough Bros.**, 80 West St., New York, N. Y. (Dealers.) (See page 207.)
- McCord & Co.**, 122 S. Michigan Ave., Chicago, Ill.
- Machinists Foundry Co.**, Tenth St. & Macedonia Ave., Muncie, Ind.
- Manufacturers Foundry Co.**, Waterbury, Conn. (See page 275.)
- Mead & Cross Co.**, 309 Lafayette St., New York, N. Y.
- Moak Machine & Tool Co.**, 2547 Connors St., Port Huron, Mich.
- Montpellier Mfg. Co.**, Montpellier, Ind.
- Morris Metal Products Corp.**, 800 Union Ave., Bridgeport, Conn.
- Mulholland, W. J.**, Commercial Trust Bldg., Philadelphia, Pa.
- Muncie Foundry & Machine Co.**, E. Ninth & Mark Sts., Muncie, Ind. (See page 751.)
- Munson Mill Machinery Co.**, 405 Broadway, Utica, N. Y.
- Murphy Foundry Co.**, Beaver Falls, Pa.
- National Foundry Co.**, of N. Y., 10-40 Sanford St., Brooklyn, N. Y.
- National Sewing Machine Co.**, Belvidere, Ill.
- Naugatuck Malleable Iron Co.**, Naugatuck, Conn.
- Nazareth Foundry & Machine Co.**, Nazareth, Pa.
- New Haven Iron Works**, New Haven, Mich.
- Newark Stamping & Foundry Co.**, Newark, O.
- Niagara Motors Corp.**, Dunkirk, N. Y. (See page 693.)
- North Wales Machine Co.**, Elm Ave. & Center St., North Wales, Pa.
- Northern Foundry Co.**, 1380 Main St., Marlton, Wis.
- Oxford Fdry. & Machine Co.**, Oxford, N. J.
- Peerless Foundry Co.**, Carthage Pike & Township Ave., (Elmwood Place), Cincinnati, O.
- Pequonnoek Foundry**, Charlotte & Fifth Sts., Bridgeport, Conn.
- Penn Foundry & Machine Co.**, Bath, Pa.
- Peru Foundry Co.**, Peru, Ind.
- Pittsburgh Iron & Steel Foundries Co.**, Oliver Bldg., Pittsburgh, Pa. "Adamsite."
- Portland Forge & Foundry Co.**, Portland, Ind.
- Portland Foundry Co.**, Portland, Conn.
- Production Foundries Co.**, Ann Arbor, Mich. (See page 241.)
- Racine Brass & Iron Co.**, 1227 Racine St., Racine, Wis.
- Racine Foundry Co.**, Tenth St. & C., M. & St. P. Ry., Racine, Wis.
- Ready Foundry Co.**, 4600 Iowa St., Chicago, Ill.
- Reliance Foundry Co.**, 600 N. Eighth St., Richmond, Ind.
- Rincon Foundry Co.**, 249-65 Seventh St., San Francisco, Cal.
- Riverside Foundry Co.**, Wrightsville, Pa.
- Ryan Foundry Co.**, D. J., Mill St., Ecorse, Mich.
- St. Louis Malleable Casting Co.**, 7300 N. Broadway, St. Louis, Mo.
- Sani Products Co.**, 209 W. Randolph St., Chicago, Ill.
- Sanitary Co. of America**, Linfield, Pa.
- Schaefer Mfg. Co.**, Pearl St., Berlin, Wis.
- Shaw, Welsh & Co.**, Galesburg, Ill.
- Sibley Machine Co.**, 204-32 E. Tutt St., South Bend, Ind.
- Smith Mfg. Co.**, A. P., Norman & Lawrence Sts., East Orange, N. J.
- Smith Mfg. Co.**, Philip, Sidney, O.
- Sowers Mfg. Co.**, 1300 Niagara St., Buffalo, N. Y.
- Speldel, J. G.**, W. Buttonwood & Gordon Sts., Reading, Pa.
- Spencer's Sons Co.**, I. S., Fair St., Guilford, Conn.
- Spring City Foundry Co.**, St. Paul Ave. & State St., Waukesha, Wis.
- Standard Foundry Co.**, Racine, Wis. (See page 241.)
- Stowell Co.**, South Milwaukee, Wis.
- Stroh Castings Co.**, 80 Chene St., Detroit, Mich.
- Suffolk Casting & Supply Co.**, 156 Pearl St., Boston, Mass.
- Susquehanna Casting Co.**, Wrightsville, Pa.
- Sweet & Doyle Fdry. & Machine Co.**, Center St. (Green Island), Troy, N. Y.
- Textile Machine Works**, Reading, Pa.
- Tower City Foundry Co.**, Tower City, Pa.
- Turner & Seymour Mfg. Co.**, Lawton St. & R. R., Torrington, Conn.
- United Brass & Aluminum Mfg. Co.**, Goulden St., Port Huron, Mich.
- Universal Foundry Co.**, Pine & Warren Sts., Oshkosh, Wis.
- Vassar Foundry Co.**, Vassar, Mich.
- W. & K.**—See Whitehead & Kales Co.
- Wabash Foundry Co.**, Carroll St., Wabash, Ind.
- Walsh, James F.**, 32 N. Clinton St., Chicago, Ill.
- Waterbury Castings Co.**, Railroad Hill St., Waterbury, Conn.
- Wayne Works**, 16th & North F Sts., Richmond, Ind.
- Weller Hdw. & Fdry. Co.**, Main St., Horseheads, N. Y.
- Wellman-Seaver Morgan Co.**, 7000 Central Ave., Cleveland, O.
- Whitehead & Kales Co.**, Michigan & Beecher Sts., Detroit, Mich. "W. & K."
- Wilco Co.**, 172 Griswold St., Detroit, Mich. (Distributors.) (See page 207.)
- Williamson Co.**, J. E., Bellwood, Pa.

Everything is listed under the NOUN or principal word

Gray Iron Castings

All kinds of Cored work, medium and small.

WE SPECIALIZE IN

PISTON CASTINGS (oversize)

RING POTS (from 2½" to 5¼")

2000 PISTON PATTERNS AT YOUR SERVICE

BARNES FOUNDRY CO., Jersey City, N. J.

TENAX
BRONZE

Tenax and Tenite are furnished in all S. A. E. standards. Let us quote on your brass, bronze and aluminum. Mail us blueprints and specifications.

CASTINGS

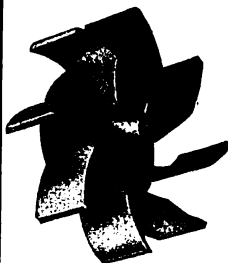
Garages: — Try Tenax No. 12 Special on your next order of high-speed bushings, bearings and stock bars of standard sizes in the rough.

The General Bronze Foundry Co.

5810 Superior Ave.
CLEVELAND,
OHIO

TENITE
ALUMINUM

CAST
PRECISION



Accuracy and High Tensile Strength
Aluminum and White Metal Alloys

Plain Babbitt Bearings

Precision die-castings represent the highest development of the art. Our ZN-3 alloy averages 22,000 lbs. tensile strength per square inch. Accuracy guaranteed to .001".

Send Blueprints or Models for Estimates

PRECISION CASTINGS COMPANY, INC.
SYRACUSE, N. Y.

For the
Automobile
and Motor
Truck Maker

ACME-DIE

CASTINGS

ALUMINUM-ZINC-TIN & LEAD ALLOYS
Acme Die-Casting Corp.
Brooklyn N.Y.

BRANCH OFFICES:

Boston
176 Federal Street
Rochester
159 St. Paul St.
Detroit
744 David Whitney Building
Chicago
549 Washington Blvd.

Please mention The Automobile Trade Directory

CASTINGS, Grey Iron (Continued)

Wilson Foundry & Machine Co., Pontiac, Mich.
 Wisconsin Aluminum Foundry, 16th & Franklin Sts., Manitowish, Wis.
 Wisconsin Cylinder Foundry Co., 1808 18th St., Racine, Wis.
 Wisconsin Foundry & Machine Co., Madison, Wis.
 Zenith Foundry Co., Miller Ave., Detroit, Mich.

CASTINGS, IRON—See Castings, Grey Iron; also Castings, Malleable Iron

CASTINGS, Malleable Iron

Acme Steel & Malleable Iron Works, 246 Military Rd., Buffalo, N. Y.
 Albion Malleable Iron Co., Albion, Mich.
 American Malleable Castings Co., 740 W. Center St., Marion, O.
 American Malleables Co., Kresge Bldg., Detroit, Mich.
 Arcade Malleable Iron Co., Albany St., Worcester, Mass.
 Auto Products Co., Station H, Cincinnati, O. (See page 159.)
 Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 247.)
 Badger Malleable & Mfg. Co., 223 N. Chicago Ave., South Milwaukee, Wis.
 Belle City Malleable Iron Co., 1500 Kewaunee St., Racine, Wis.
 Benton Harbor Malleable Foundry Co., Benton Harbor, Mich.
 Bridgeport Malleable Iron Works, Bridgeport, Conn.
 Buhl Malleable Iron Co., 230 Wight St., Detroit, Mich.
 Central Service Corp., 1807 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
 Chicago Malleable Castings Co., 718 Book Bldg., Detroit, Mich. (See page 211.)
 Chicago Malleable Castings Co., 120th St. & S. Racine Ave., Chicago, Ill.
 Chicago Malleable Castings Co., West Pullman, Ill.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
 Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O.
 Columbus Malleable Iron Co., Curtis Ave., Columbus, O.
 Danville Malleable Iron Co., 906 N. Bowman Ave., Danville, Ill.
 Dayton Malleable Iron Co., Dayton, O.
 Dayton Malleable Iron Co., Ironton, O.
 Decatur Malleable Iron Co., Decatur, Ill. (See page 223.)
 Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
 Devlin Mfg. Co., Thos. Third & Lehigh Aves., Philadelphia, Pa.
 Eastern Malleable Iron Co., Naugatuck, Conn.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Erie Malleable Iron Co., 12th & Cherry Sts., Erie, Pa.
 Fanner Mfg. Co., Brookside Pk., Cleveland, O.
 Federal Malleable Co., West Allis, Wis.
 Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
 Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
 Fraser & Jones Co., Syracuse, N. Y. (See page 223.)
 General Malleable Co., Warren, O.
 Gilliam Mfg. Co., Savannah Ave. & Eighth St. N. E., Canton, O.
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for Stowell Castings.) (See page 583.)
 Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.
 H. & D. Co., Crawfordsville, Ind. (See page 1031.)
 Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.
 Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.
 Jamestown Malleable Products Corp., Fenton Bldg., Jamestown, N. Y.
 Jewell Steel & Malleable Co., 273 Hertel Ave., Buffalo, N. Y.
 Kalamazoo Malleable Iron Co., N. Pitcher St., Kalamazoo, Mich.
 Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.
 Kokomo Malleable Iron Co., Kokomo, Ind.
 L. N. N. Foundry, Cleveland, O.
 Lancaster Foundry Co., Lancaster, Pa.
 Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
 Mal-Gra Castings Co., Cambridge City, Ind.
 Malleable Iron Fittings Co., Bramford, Conn. (See page 247.)
 Marion Malleable Iron Works, Marion, Ind. (See page 221.)
 Meeker Foundry Co., 95 Clay St., Newark, N. J.
 Missouri Malleable Iron Co., 15th St. & Bradley Ave., East St. Louis, Ill.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Muncie Malleable Foundry Co., Muncie, Ind.
 National Malleable Castings Co., Chicago, Ill.
 National Malleable Castings Co., East St. Louis, Ill.
 National Malleable Castings Co., Indianapolis, Ind.
 National Malleable Castings Co., Melrose Park, Ill.
 National Malleable Castings Co., 10600 Quincy Ave., Cleveland, O.
 Naugatuck Malleable Iron Works, Naugatuck, Conn.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
 Northern Malleable Iron Co., 867 Forest St., St. Paul, Minn.
 Northwestern Malleable Iron Co., 756 Park St., Milwaukee, Wis.
 Ohio Malleable Iron Co., Fields Ave. & Panama R. R., Columbus, O.
 Pittsburgh Malleable Iron Co., Pittsburgh, Pa.
 Platt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.
 Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.
 Rhode Island Malleable Iron Works, Hillsgrove, R. I.
 Richmond Malleable Castings Co., Scott Bldg., Richmond, Ind.
 Rockford Malleable Iron Works, Peoples Ave. & O. B. & Q. Tracks, Rockford, Ill.
 Ross-Mecham Foundries, Chattanooga, Tenn.
 Saginaw Malleable Iron Co., Center & Salt Sts., Saginaw, Mich.
 St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
 St. Louis Malleable Castings Co., 7800 N. Broadway, St. Louis, Mo.
 Smith Wheel, Inc., Syracuse, N. Y. (See page 1057.)
 South Side Malleable Casting Co., Windlake & 14th Aves., Milwaukee, Wis.
 Springfield Malleable Iron Co., Bechtie Ave. & Big Four R. R., Springfield, O.
 Stowell Co., South Milwaukee, Wis.

Everything is listed under the NOUN or principal word

The FACTORY



Where better bushings are made

Our plant has grown from a small shop to the plant you see in the illustration.

As our plant has expanded in size . . . so have our men increased in skill.

Just as "making better bushings" is the aim of our factory . . . so "making better bushings" is the life work of our men. They have grown up with the plant. Our aims, our ideals . . . have become their aims and ideals.

It is only reasonable to believe that men who make one thing their life work can do that thing better than anyone else, provided they have the proper tools and machinery to work with.

Our factory is equipped with the most up-to-date machinery. Every piece of machinery that is needed to turn out a "better bushing" is found here.

By using this machinery and employing men who have made "making better bushings" their life work, we feel that we can honestly call our factory "The Factory Where Better Bushings Are Made."

THIERY & KENDRICK MFG. CO.

660 Franklin Street

::

::

DETROIT, MICH.

MARION MALLEABLE IRON WORKS

MARION, INDIANA

MANUFACTURERS OF

CERTIFIED MALLEABLE IRON CASTINGS

FOR

AUTOMOBILES AND TRACTORS

We Make



Specify Them

PATTERN SHOP IN CONNECTION

Please mention The Automobile Trade Directory

CASTINGS, Steel (Continued)

Pittsburgh Iron & Steel Foundries Co., Oliver Bldg., Pittsburgh, Pa. "Adamite."

Pyro—See Swedish Crucible Steel Co.

Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.

Reading Steel Casting Co., Reading, Pa.

Reed Foundry & Machine Co., Kalamazoo Mich.

Riverside Steel Casting Co., Newark, N. J.

Ryan Foundry Co., D. J., Mill St., Ecorse, Mich.

Sivyer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.

Smith Steel Castings Co., Geo. H., 500 Clinton St., Milwaukee, Wis.

Standard Crucible Steel Castings Co., 719 80th St., Milwaukee, Wis.

Standard Steel Castings Co., Hickox Bldg., Cleveland, O.

Stowell Co., South Milwaukee, Wis.

Strong Steel Foundry Co., Hertel Ave. & Norris St., Buffalo, N. Y.

Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.

Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Pyro."

Taylor Co., W. P., 577 Howard St., Buffalo, N. Y.

Taylor-Wharton Iron & Steel Co., High Bridge, N. J. "Tisco."

Teco—See Treadwell Engineering Co.

Tisco—See Taylor-Wharton Iron & Steel Co.

Toledo Steel Casting Co., Monroe & Detroit Sts., Toledo, O.

Treadwell Engineering Co., Edelman & Lennox Sts., Easton, Pa. "Teco."

Twin City Forge & Foundry Co., Stillwater, Minn.

Union Steel Casting Co., Bartlett Sq. (Jamaica Plain), Boston, Mass.

Walsh, James F., 32 N. Clinton St., Chicago, Ill.

Warren Steel Casting Co., 3400 Maury Ave., St. Louis, Mo.

Wehr Steel Co., 45th & Gordon Aves., West Allis, Wis.

Wellman-Seaver Morgan Co., 7000 Central Ave., Cleveland, O.

West Michigan Steel Foundry Co., 580 Western Ave., Muskegon, Mich.

West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.

Western Crucible Steel Casting Co., 2833 Grand Ave., S., Minneapolis, Minn.

Wharton, Jr., & Co., Wm., Easton, Pa.

Whitman Co., A. P., Fourth & Booth Sts., Chester, Pa.

Wileco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 207.)

CASTLE NUTS—See Nuts, Castellated

CASTOR OIL—See Oil, Castor

CASTORS, WRECKING—See Trucks, Wrecking

CASTORS and WHEEL TRUCKS

(For turning cars in Garages; see also Turntables, Automobiles)

Service Caster & Truck Co., Kansas City, Mo.

Weber Portable Turn-Table Trucks, 6 E. Kiowa St., Colorado Springs, Colo.

Zering Mfg. Co., H., 4437 Appleton Ave., Cincinnati, O.

CATCHES and FASTENERS, Spring Cabinet

(For Hool Boards, Doors or Cabinets)

Bassick Co., Bridgeport, Conn. (See page 323.)

Brainerd Mfg. Co. (East Rochester), Rochester, N. Y.

Brass Goods Mfg. Co., 345 Eldert St., Brooklyn, N. Y.

Corbin Cabinet Lock Co., New Britain, Conn.

Sargent & Co., Water & Wallace Sts., New Haven, Conn.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

CELLULOID CEMENT—See Cement, Celluloid

CELLULOID CLEANERS—See Cleaners, Celluloid

CELLULOID CURTAIN LIGHTS—See Lights, Curtain

CELLULOID, Sheet

(For windows in curtains and storm fronts)

Celluloid Co., 30 Washington Pl., New York, N. Y.

du Pont de Nemours & Co., E. L., (Pyralin Division) Wilmington, Del. (See page 225.)

Fiberloid Co., 55 Fifth Ave., New York, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Viscoloid Co., Leominster, Mass.

CEMENT, Airplane Waterproof

(See also Glass, Airplane Liquid)

Ulmer Leather Co., Norwich, Conn.

CEMENT, Cast Iron

(For repairing cracks in castings; for cement for repairing leaky radiators—See Cement, Radiator)

Albertus & Co., F. A., 206 Ninth St., Milwaukee, Wis. "F. A. A."

Alumiflux—See Harner Mfg. Co.

Brand Co., S. H., 559 W. Lake St., Chicago, Ill.

Central Foundry Supply Co., St. Clair Ave. & P. R. R., Columbus, O.

Clark Cast Steel Cement Co., Shelton, Conn. "Steamite."

Clasby Mfg. Co., 905 N. Main St., Pueblo, Colo. "Singer's."

F. A. A.—See Albertus & Co.

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)

Harner Mfg. Co., E. C., 143 Pipestone St., Benton Harbor, Mich. "Alumiflux."

Neu Metal Products Corp., Whipple Bldg., Binghamton, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. (See page 277.)

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.

Shelton Metallic Filler Co., Derby, Conn.

Singer's—See Clasby Mfg. Co.

Everything is listed under the NOUN or principal word



THE use of Fabrikoid in the automobile world is steadily increasing.

The Craftsman Top, for instance, with its colorful covering of Craftsman Fabrikoid, and the comfort and convenience it provides at low cost, has become so popular that in addition to the great number of trimming shops which are building this top to order, many leading car manufacturers have adopted it as standard equipment.

Fabrikoid is also extensively used for trimming and upholstering.

Another use which is increasing rapidly in popularity is the Craftsman Fabrikoid Finish. The Fabrikoid is cemented firmly to the car body and provides a distinctive finish that will outlast the car.

And whatever the use—all Fabrikoid is scuffproof, stainproof and waterproof. It has consistently demonstrated this under the hardest service.

Samples and full information on request

E. I. du Pont de Nemours & Co., Inc.
Sales Department Fabrikoid Division
Wilmington, Delaware

Branch Offices

Boston	Detroit
Chicago	Indianapolis
Denver	Pittsburgh
San Francisco	
21 E. 40th St., New York City	
Plant: Newburgh, N. Y.	

CEMENT, Cast Iron (Continued)

Smooth-On Mfg. Co., 573 Communipaw Ave., Jersey City, N. J.
 Steamite—See Clark Cast Steel Cement Co.
 Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.
 Wonder Worker—See Hall-Thompson Co.

CEMENT, Celluloid*(For repairing curtain lights)*

Auto Products Co., 5789 Elmer St., Pittsburgh, Pa. "Cellu-Fix."
 Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Stitch."
 Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 363.)
 Cellu-Fix—See Auto Products Co.
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylonene," "Xylolust."
 Dutch—See Van Cleef Bros.
 Monarch Auto Specialties Co., 1211-13 Claybourn Ave., Chicago, Ill.
 Nev-R-Stitch—See Auto Products Mfg. Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Xylolene—See Dealers Motor Supply Corp.
 Xylolust—See Dealers Motor Supply Corp.

CEMENT, Gasket

Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)
 Anchor—See National Rubber & Specialties Co.
 Auto Products Mfg. Co., Buffalo, N. Y. "Tite-R-On."
 Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 363.)
 Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."
 Be-Be-Co.—See Boston Blacking Co.
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Buffalo Specialty Co., Buffalo, N. Y. (See page 227.)
 Bulls-Eye—See Zinsser & Co.
 Butler-Harley Co., 33d & Master Sts., Philadelphia, Pa. "Harco."
 Cactus—See Automotive Supply Co.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Cuban—See Rust-Off Mfg. Co.
 Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."
 Danno—See Dannenhirsch Co.
 Day & Co., James B., 314 W. Ohio St., Chicago, Ill. "Gaskalac."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Ebersohn-Lindsay Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 Falls Chemical Works, Cedar Falls, Iowa.
 Fossilac—See Red Line, Inc.
 Gaskalac—See Day & Co.
 Gasketite—See Woodtite Laboratories.
 Gasketlac—See Indianapolis Paint & Color Co.

Harco—See Butler-Harley Co.
 Holdfast—See Buffalo Specialty Co.
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 I. C. U.—See Livingston Co.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Gasketlac."
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa. "3 in 1."
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
 Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Anchor."
 Neu Metal Products Corp., Whipple Bldg., Binghamton, N. Y. "Old Roman."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
 Norwesco—See Northwestern Chemical Co.
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.
 Old Roman—See Neu Metal Products Corp.
 Peerless—See Columbus Varnish Co.
 Perma-Lac Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Permatex—See Benoit, Constant A.
 Red Line, Inc., Grand Rapids, Mich. "Fossilac." (See page 667.)
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Sealac," "Cuban."
 Sealac—See Rust-Off Mfg. Co.
 3 in 1—See Mengo Products Co.
 Tite-R-On—See Auto Products Mfg. Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Whiz—See Hollingshead Co.
 Woodtite Laboratories, Modesto, Cal. "Gasketite."
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

CEMENT, IRON—See Cement, Cast Iron**CEMENT, Linoleum**

Day & Co., James B., 314 W. Ohio St., Chicago, Ill. "Enduro."
 Enduro—See Day & Co.
 Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass. "20th Century."
 20th Century—See Ferdinand & Co.

CEMENT, METAL—See Cement, Cast Iron**CEMENT, Radiator Repair***(For repairing or sealing leaks in radiators)*

Ajaco—See Alsdorf Corp.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)
 Ad-el-ite—See Adams & Elting Co.
 Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."

Everything is listed under the NOUN or principal word

The Original RADIATOR NEVERLEAK

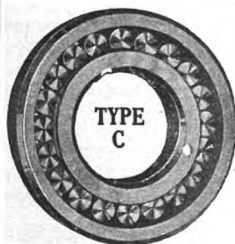
Dealers: Why not give your customers the best there is, especially when you make a handsome profit of 85%? We guarantee Radiator Neverleak to stop leaks anywhere in cooling system in less than 10 minutes, permanently and without injury to motor. Will add years to the life of any radiator. You are losing big money if you do not stock this famous liquid.



Ask Your Jobber

**BUFFALO SPECIALTY
COMPANY**

Buffalo, N. Y.



ROLLER BEARINGS

*Type A
Type B
Type C*

Graham Quality

HIGH CARBON CHROME STEEL

Used in All Bearings Exclusively

**Engineering Service
Free**

GRAHAM ROLLER BEARING CORP
COUDERSPORT, PA.

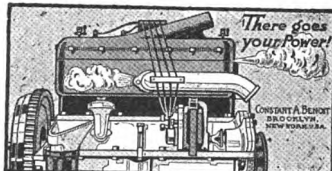


PERMATEX PRODUCTS

**Automobile
Tractor
Motorcycle
Bicycle**

Mr. Dealer:—Let Permatex Quality build your business. Ask your jobber for Discosets and information about the Permatex Dealer's Catalogue, Four-Color Displays, and Selling Help.

If your jobber cannot quote you, write us and we will see that you receive at once, all information from a Permatex Distributor in your immediate vicinity.



**Stop those Gasket Leaks with
PERMATEX GASKET CEMENT**
WE CAN SUPPLY YOU

PERMATEX GASKET CEMENT
For Use on all forms of gaskets

PERMATEX RADIATOR CEMENT
Quick repair for leaky radiators

PERMATEX ANTI-STORM
Waterproof top and cushion dressing

PERMATEX CLUTCH COMPOUND
Keeps clutches from slipping

PERMATEX PRUSSIAN BLUE
For bearing adjustment work

PERMATEX FORM-A-GASKET
A gasket material in heavy paste form

PERMATEX AUTO-LAC
One-coat, durable, color finishes

PERMATEX BODY SURFACER
A very rapid and solid filler

PERMATEX RAPID REPAIR BLACK
One coat, 30-minute enamel

PERMATEX ENGINE ENAMELS
Heat resisting protective finishes

PERMATEX PAINTING OUTFITS
Complete outfits for refinishing cars

PERMATEX TAROFF
Removes tar but not the finish

PERMATEX CARBO-KLEAN
Removes carbon from cylinders

PERMATEX SOLVO-RUST
For loosening all rusted parts

PERMATEX NEVER-SQUEAK
For squeaky springs and similar parts

PERMATEX FINISHING VARNISH
For hoods, body and running gear

PERMATEX MOTORCYCLE ENAMELS
Air drying, standard colors

PERMATEX BICYCLE ENAMELS
High gloss, quick drying enamels

RIM PARA SHELLAC
High grade bicycle tire binder

TITE TITE LIQUID SHELLAC
For fastening cycle tires to rims

CONSTANT A. BENOIT

Manufacturers of Colors, Enamels,
Varnishes, Cements

BROOKLYN, NEW YORK, U. S. A.

Please mention The Automobile Trade Directory.

CEMENT, Radiator Repair (Continued)

Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.
 American—See Crum Mfg. Co.
 An-Ti-Le-Ko—See Ball Products Co.
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. (See page 229.)
 Auto Products Mfg. Co., Buffalo, N. Y. "Quick-R-Fix."
 Auto Remedy Co., Evans St., Cincinnati, O. "Magic."
 Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 303.)
 B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
 Ball Products Co., 226 Fifth St., Detroit, Mich. "An-Ti-Le-Ko."
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Beats-All—See Auto Specialties Mfg. Co.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
 Blue Ribbon—See International Metal Polish Co.
 Boggs Co., Kirk A., Fort Dodge, Iowa. "Mecco."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Buffalo Specialty Co., Buffalo, N. Y. "Neverleak." (See page 227.)
 Bush Chemical Co., St. Louis, Mo.
 Butler-Harley Co., 33d & Master Sts., Philadelphia, Pa. "Harco."
 Camden Chemical Mfg. Co., 18th & Mickie Sts., Camden, N. J. "Greyhound."
 Campbell, V. R., 126 Penna. Ave., Elmira, N. Y. "Victor."
 Check—See O-K Auto Supply.
 Crum Mfg. Co., 120 N. Main St., Ottawa, Kans. "Radi-No-Leak," "American."
 Cumings Bros., 901-03 S. Saginaw St., Flint, Mich. "Stoppit."
 Cure-A-Leak—See Dannenhirsch Co.
 Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Cure-A-Leak."
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.
 Gee-Bee—See Green Bay Supply Co.
 Green Bay Supply Co., 513 Maine St., Green Bay, Wis. "Gee-Bee."
 Greyhound—See Camden Chemical Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker." (See page 229.)
 Harco—See Butler-Harley Co.
 Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
 International Metal Polish Co., Quill St. & Balt R. R., Indianapolis, Ind. "Blue Ribbon."
 Johnson & Son., S. C., 1012 16th St., Racine, Wis.
 Karbonoid Chemical Co., 318 East Ave., Elyria, O. "No-Le-Ko."
 Leak Cure Metal Cement Co., 110 Fulton St., New York, N. Y.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.

Lowe Mfg. Co., J. H., Seneca Falls, N. Y. "Owl."
 Maglo—See Auto Remedy Co.
 Mecco—See Boggs Co.
 Mengo Products Co., 517 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Mirrollike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Moco—See Tungsten Mfg. Co.
 Monarch Auto Specialties Co., 1211-13 Claybourn Ave., Chicago, Ill.
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 National Chemical Co., Canal Fulton, O. "Quick-Seal."
 Neverleak—See Buffalo Specialty Co.
 No-Le-Ko—See Karbonoid Chemical Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Se-Ment-OL." (See page 277.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Radi-Mend."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 O-K Auto Supply, 512 S. First St., Blackwell, Okla. "Check."
 Owl—See Lowe Mfg. Co.
 Panther—See B. A. T. Co.
 Peerless Auto Specialty Corp., 123 St. Paul St., Rochester, N. Y.
 Perma-Lee Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Permatex—See Benoit, Constant A.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Quick-Seal—See National Chemical Co.
 Quik-R-Fix—See Auto Products Mfg. Co.
 Radi-Mend—See Nu-Back Mfg. Co.
 Radi-No-Leak—See Crum Mfg. Co.
 Red Line, Inc., Grand Rapids, Mich. (See page 607.)
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Ryden Supply Co., 203 E. Lake St., Minneapolis, Minn. "Shurmend."
 Se-Ment-OL—See Northwestern Chemical Co.
 Smooth-On Mfg. Co., 512 Communipaw Ave., Jersey City, N. J.
 Sterno Corp., New York, N. Y. (See page 229.)
 Stix-Tite—See Guaranty Tire & Vulcanizing Co.
 Stone Solder Co., 3107 Detroit Ave., Cleveland, O.
 Stoppit—See Cumings Bros.
 Shurmend—See Ryden Supply Co.
 Sureseal Mfg. Co., 9 Centre St., Auburn, Me.
 Tungsten Mfg. Co., Marshalltown, Ia. "Moco." (See page 729.)
 Universal Solder Co., Fort & Beaubien Sts., Detroit, Mich.
 Victor—See Campbell, V. R.
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.
 "X" Laboratories, 25 W. 45th St., New York, N. Y.
 Z & A Mfg. Co., Hazelton, N. Dak.

CEMENT, RUBBER—See Cement, Tire Repair

Everything is listed under the NOUN or principal word

**WONDER
WORKER**

BRILLIANT LUSTRE
shows the character of Wonder-Worker leaders—giving results hardly believable of any polish. It brings out the factory finish of a car as it stood out in the beginning. Cleans through the coating of grime, grease, dried-on oil and wax polishes down to the original baked-on finish, which it beautifully restores. Leaves no oily surface to collect dust; nothing to streak or gum over like a wax polish; none of the tarnish or corrosion following the use of soap and water. Pint bottle (list) \$1.00.

**WONDER
WORKER**

Specialties include more than 60 items—a specialized article for **every** different purpose in the care and repair of cars. This largest of all lines enables the jobber and dealer to obtain all items from a single source—doing business with one concern, saving time and transportation extras, reducing the duplication of lines.

Write for catalog and price list to Dept. A

THE HALL-THOMPSON CO., Hartford, Conn., U. S. A.

There are Many "Tire Doughs" But Only One, Genuine Original

TIRE-DOH



Genuine TIRE-DOH outfit includes both TIRE-DOH and TIRE-DOH Cement. BOTH are necessary to get perfect results. Over 750,000 TIRE-DOH users—10,000 Dealers—prove the merits of the genuine TIRE-DOH.

Atlas Auto Supply Company
697 W. Austin Ave. Chicago, Ill.

Get Acquainted With These Trade Winners

Sterno Carbon Remover

Sterno Priming Fluid

Sterno Radiator Cement

Sterno Hand Soap

Sterno Polish

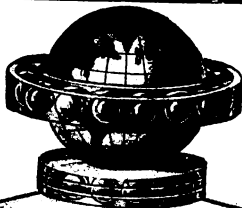
—and—

other wonderful sellers in the
**STERNO LINE of automobile
accessory specialties.**

JOBBERS AND DEALERS - WRITE

Sterno Corporation, New York

Annular Bearings
Thrust Bearings
Thrust Retainers



Quantity
Production
Only

Detroit

Imperial Bearing Co.

Michigan

Please mention The Automobile Trade Directory

CEMENT, Tire Repair

(Rubber Cement for repairing or patching shoes and tubes; for cement for filling cuts in shoes—See Compounds, Tire Repair)

Acme Supply Co., 112 Dexter St., Ionia, Mich.
 Ajax Rubber Co., New York, N. Y.
 (See page 955.)
 American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Tire-Doh."
 (See page 229.)
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Biehl, G. M., 204 S. Centre St., Pottsville, Pa.
 Blue Ribbon—See International Metal Polish Co.
 Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
 Bucco—See Burgin & Co.
 Bull Dog—See Page-Lester Co.
 Bull Grip, 57-61 Eugenia St., Atlanta, Ga.
 Burgin & Co., 487 Broadway, New York, N. Y. "Bucco."
 C. O. T.—See Tingley & Co.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 Cox, David H., 812 Chestnut St., Roselle, N. J.
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
 Durkee-Atwood Co., 49 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Eclipse Cement & Blacking Co., 1238 Belmont Ave., Philadelphia, Pa. "Tiger."
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."
 Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
 Ever Right—See Fry, Keyser.
 Farr's Sure-Hold Tire Cement Co., 114 Lawrence St., New York, N. Y. "Sure-Hold."
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Fry, Keyser, 616-32 N. Eighth St., Reading, Pa. "Ever Right."
 General Tire & Rubber Co., E. Market St., Akron, O.
 Goodrich Co., B. F., S. Main St., Akron, O. "Titan."
 Goodbar Rubber Co., 40 Wilder St., Minneapolis, Minn.
 Goodyear Tire & Rubber Co., Akron, O.
 (See page 963.)
 Guaranty Tire & Vulcanizing Co., Fort Dodge, Ia. "Stix-Tite."
 Hadley Bros.-Uhl Co., 3945-52 W. Pine Blvd., St. Louis, Mo. "Okeh."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
 (See page 229.)
 Harlens Co., Erie, Pa.
 Heal-A-Cut—See United States Tire Co.
 Henry's—See Perfectix Rubber Co.
 Holdfast—See Diamond Holdfast Rubber Co.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Iowa Cord Tire Co., Fleming Bldg., Des Moines, Iowa.
 J. E.—See Eno Rubber Co.
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
 Locktite Patch Co., 7850 Morrow St., Detroit, Mich.

Lok-Seal—See Stephens Rubber Co.
 Majestic Auto Products Corp., 2 Columbus Circle, New York, N. Y. "Neverfat."
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 Menzo Products Co., 557 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Michelin Tire Co., Milltown, N. J.
 Miller, Chas. H., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.
 Motor Parts Co., Ambridge, Pa.
 National Chemical Co., Canal Fulton, O. "Quick Seal."
 National Rubber & Specialties Co., 4423-29 Chickering Ave., Cincinnati, O. "Red Cross."
 Neverfat—See Majestic Auto Products Corp.
 Okeh—See Hadley Bros.-Uhl Co.
 P. P. & B.—See St. Louis Rubber Cement Co.
 Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Bull Dog."
 Parks & Co., F. B., 35 Prescott St., Grand Rapids, Mich.
 Perfectix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Ferma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Rubbertite."
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Red Cross—See National Rubber & Specialties Co.
 Red Seal Rubber & Cement Co., Passaic, N. J. (See page 231.)
 Red X—See St. Louis Rubber Cement Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Rubbertite—See Polson Rubber Co.
 S-V—See Williams Mfg. Co.
 St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "P. P. & B." "Red X."
 Seal-Fast—See Bowes Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Lok-Seal."
 Stickfast—See American Rubber & Tire Co.
 Stopptit—See Cumings Bros.
 Superfix Rubber Co., Elyria, O.
 Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.
 Tiger—See Eclipse Cement & Blacking Co.
 Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T."
 Tire-Doh—See Atlas Auto Supply Co.
 Titan—See Goodrich Co.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Heal-A-Cut."
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Vitalic—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Eastwick Ave., Jersey City, N. J.
 Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."
 Wonder Worker—See Hall-Thompson Co.

CEMENT, Top Repair

Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Everything is listed under the NOUN or principal word

MACHINE BRONZE

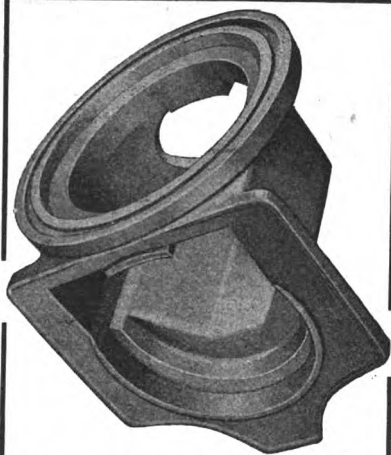
Quick!

For Replacing Worn Out Bushings.

Ask any of the following Distributors:

Detroit.....	The T. B. Rayl Co.
Boston.....	Chandler & Farquhar Co.
Pittsburgh.....	Pittsburgh Supply Co.
Buffalo.....	Beals, McCarthy & Rogers, Inc.
Chicago.....	The Machinists Supply Co.
New York.....	Manning, Maxwell & Moore, Inc.
Kansas City.....	Ri hards & Conover Hardware Co.
St. Louis.....	Beck & Corbitt Iron Co.
Louisville.....	Neill-LaVieille Supply Co.
Milwaukee.....	Ph. Gross Hardware & Supply Co.
Washington.....	Washington Machinery & Supply Co.
Spokane.....	Smith-Courtney Co.
Richmond.....	The E. A. Kinsey Co.
Cincinnati.....	Carey Machinery & Supply Co.
Baltimore.....	Sherritt & Stoer Co., Inc.
Philadelphia.....	Belcher & Loomis Hardware Co.
Providence.....	J. H. Russell Co.
Holyoke.....	Beck & Gregg Hardware Co.
Atlanta.....	Pasco Tool Co.
Grand Rapids.....	McMullen Machinery Co.
Rochester.....	Homer Strong
Olean.....	Luther Manufacturing Co.
Cleveland.....	The Cleveland Tool & Supply Co.
Portland, Maine.....	E. Corey & Co.
Louistown, Maine.....	Harvey Machine Co.
Augusta, Maine.....	Brooks Hardware Co.

LUMEN BEARING COMPANY
Brass Founders BUFFALO, N. Y.



FINISHED DIE CAST PARTS

Tin
Zinc
Lead
Babbit
Aluminum

} Alloys

SAND CASTINGS

Phosphor
Manganese
Aluminum
Bearing
Gear

} Bronzes

Red Brass
Yellow Brass
Aluminum
Cored and Solid Bars of
Standard Alloys

MACHINED PARTS

Bronze Bearings
Bronze Bushings
Brass Parts
Edkin Metal Brake Lining
Screw Machine Products

TRADE



MARK

Our products are the result of twelve years cumulative experience. Capacity, 6000 pounds per day. Send blueprints or samples for estimate.

ERIE BRONZE COMPANY
355 West Nineteenth St. ERIE, PA.

Red Seal Rubber & Cement Co.

Passaic, N. J.

Revolutionizes Rubber Repairing

Price \$1.50 the Tube

RED SEAL CEMENT

The Most Profitable Seller

Removes the last objection the average motorist has against tire and tube patching. It's so easy. No patches, no vulcanizing, no heat, no delay. Nothing but a cement of new composition. Furnished in attractive counter display cases; sold at \$1.50 retail.

Red Seal Rubber & Cement Co.
Passaic New Jersey

Please mention The Automobile Trade Directory

CEMENT, VULCANIZING—See Cement, Tire Repair

CENTER GAGES—See Gages, Center

CENTER PUNCHES—See Punches, Center Prick and Drift

CENTERING DRILLS—See Drills, Centering

CENTRIFUGAL CLARIFIERS—See Clarifiers

CENTRIFUGAL OIL PURIFIERS—See Purifiers, Oil

CENTRIFUGALS, CLARIFYING AND FILTERING—See Separators, Oil

CHAIN APPLIERS—See Tools, Tire Chain Attaching

CHAIN BLOCKS—See Blocks or Hoists, Chain

CHAIN, DRIVING—See Chain, Transmission

CHAIN, DRIVING FOR MOTORCYCLES—See Chain, Motorcycle Driving

CHAIN FASTENERS—See Fasteners, Tire Chain

CHAIN GUARDS—See Guards, Motorcycle Chain

CHAIN HOISTS—See Blocks or Hoists, Chain

CHAIN LOCKS—See Locks, Tire Chain

CHAIN LUBRICANT—See Graphite; also Greases.

CHAIN, Motorcycle Driving

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 237.)

Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Duckworth Chain & Mfg. Co., Springfield, Mass.)

Duckworth Chain & Mfg. Co.—See Brandenburg Bros. & Eccleston.

Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Hans Renold." (Importers.) (See page 900.)

Hans Renold—See Frasse & Co.

Presto—See Whitney Mfg. Co.

Whitney Mfg. Co., Hartford, Conn. "Presto." (See page 233.)

CHAIN REPAIR LINKS—See Links, Tire Chain Repair

CHAIN REPAIR TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Repair; also Tools, Motorcycle Chain Repair

CHAIN, SILENT—See Chain, Transmission

CHAIN SPRINGS — See Tighteners, Tire Chain

CHAIN TIGHTENERS — See Tighteners, Tire Chain

CHAIN TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Attaching; also Tools, Tire Chain Repair; also Tools, Motorcycle Chain Repair

CHAIN, Transmission or Driving

(Including Block, Roller and Silent Chain)

Abell-Howe Co., 332 S. Michigan Ave., Chicago, Ill. (Sole Distributors for American High Speed Chain Co., Indianapolis, Ind.)

American High Speed Chain Co.—See Abell-Howe Co.

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 237.)

Brampton—See Miller, Chas. E.

Coventry—See Funke Co.

Culver-Taylor Chain Works, 514 Madison Ave., Detroit, Mich.

Diamond Chain & Mfg. Co., Kentucky Ave., W., Indianapolis, Ind.

Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Renold." (Importers.) (See page 900.)

Funke Co., Herbert F. L., 118 Broad St., New York, N. Y. "Coventry." (See page 357.)

Link-Belt Co., Indianapolis, Ind. (See page 237.)

Miller Chas. E., 231 W. 54th St., New York, N. Y. (Importer.) "Brampton."

Morse Chain Co., Ithaca, N. Y. (See page 235.)

Renold—See Frasse & Co.

Townsend Co., W. E., 137 W. 56th St., New York, N. Y. (Distributors.) (See page 347.)

Whitney Mfg. Co., Hartford, Conn. (See page 233.)

CHAINS or GRIPS, Non-Skid

(For other Anti-Skid Devices—See Bands, Non-Skid; also Boots, Band; also Tracks, Detachable)

ABC—See American Safety Grip Corp.

A. B. C.—See American Business Corp.

Ace Chain Corp., 235 W. 58th St., New York, N. Y.

American Business Corp., 1780 Broadway, New York, N. Y. "A. B. C."

American Chain Co., Bridgeport, Conn. "Rido-Skid," "Weed." (See page 543.)

American Non-Skid Attachment Co., 4864 Woodward Ave., Detroit, Mich. "Clegson."

American Safety Grip Corp., 245 W. 56th St., New York, N. Y. "ABC."

American Traction Ring Co., White Plains, N. Y.

Anti-Skid Auto Shoe Co., 1723 Third Ave., Moline, Ill.

Arrow-Grip Mfg. Co., Glens Falls, N. Y.

Auto Tire Boot Co., 1210 Webster Ave., Chicago, Ill.

Automotive Equipment Co., Parson & Walbridge Sts., Kalamazoo, Mich. "Master Grip."

Bantlin Co., Julius J., Cincinnati, O.

Bear—See Iverson-Conway Co.

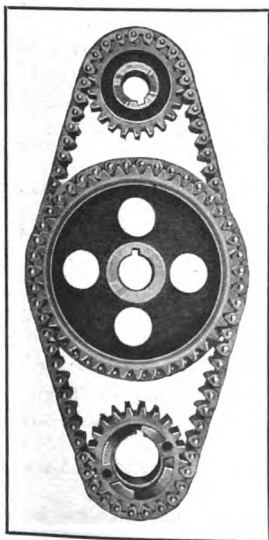
Everything is listed under the NOUN or principal word

**OVER 50,000 MILES
NOW REPORTED ON**

“WHITNEY”

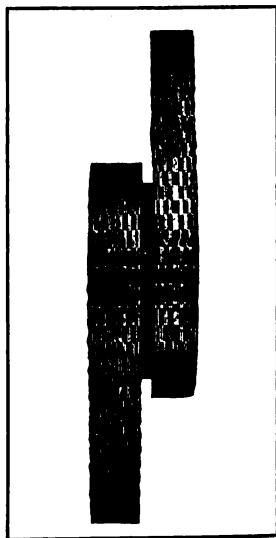
HIGH EFFICIENCY

**FRONT END MOTOR CHAIN DRIVES
AND STILL IN GOOD CONDITION**



Not one of these
chains has been
known to skip a
sprocket tooth.

Chains having a
high mileage
save incon-
venience and
frequent re-
placement ex-
pense.



THE WHITNEY MFG. CO.

HARTFORD, CONN., U. S. A.

Please mention The Automobile Trade Directory

CHAINS or GRIPS, Non-Skid (Continued)

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Q-D."
 Bersted Mfg. Co., 765 Mather St., Chicago, Ill. (See page 515.)
 Bradley—See Truck Parts & Foundry Co.
 Campbell, George J. 1207 Vine St., Philadelphia, Pa.
 Channon Mfg. Co., James H., 228-33 W. Erie St., Chicago, Ill. "Union."
 Clegson—See American Non-Skid Attachment Co.
 Cleveland Chain & Mfg. Co., Cleveland, O. "Trax-Yun."
 Daubenspeck Chain Co., Brady & Monroe Sts., Butler, Pa. "Dubl-Bilt." "Minute Grabs."
 Dow & Cole, 1173 Elm St., Manchester, N. H. "Spider."
 Dubl-Bilt—See Daubenspeck Chain Co.
 Eason—See Woodworth Mfg. Co.
 Easyroll—See Will-Burt Co.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Emergency—See Gemco Mfg. Co.
 Emergency Anti-Skid Chain Co., Sterling, Ill.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (See pages 1017 to 1022.)
 Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. "Emergency." (See pages 172 and 173.)
 Giant Grip Mfg. Co., Oshkosh, Wis. (See page 327.)
 Gibney Mfg. Co., Minneapolis, Minn. "Master."
 Goodhue, John, Laconia, N. H.
 Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.
 Hadco—See Haden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco." (See page 821.)
 Highway—See Owen & Graham Co.
 Hodges Chain Co., Galesburg, Mich. "No-Stuck."
 Holmes—See Saltzman Co.
 Imperial Bit & Snap Co., Racine, Wis. "Reichert." (See page 325.)
 Iverson-Conway Co., 160 N. Wells St., Chicago, Ill. "Bear."
 Jiff-On—See Midland Co.
 K-L—See Kingsbury-Leahy Co.
 Kalamazoo Chain Co., Kalamazoo, Mich. "No-Stuck."
 Kant-Skid—See Woodworth Mfg. Co.
 Kiff-On—See Scharrow Mfg. Co.
 Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.
 Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
 Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.
 Loktite—See Staples & Seefeld.
 Lutz Co., Morris, Hambrey & Moore Sts., Philadelphia, Pa. (See page 293.)
 Master—See Gibney Mfg. Co.
 Master-Grip—See Automotive Equipment Co.
 Metal Stamping Co., 15th St. & East ave., Long Island City, N. Y.
 Midland Co., South Milwaukee, Wis. "Jiff-On."
 Minute Grabs—See Daubenspeck Chain Co.
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."
 Mundorf, Wm. C., 1401 First Ave., York, Pa.
 Naceoid Service Chain Co., Third & Schenck Sts., Trenton, N. J.
 Never-Skid Mfg. Co., 120 Broadway, New York, N. Y.

Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.
 No-Stuck—See Hodges Chain Co.
 No-Stuck—See Kalamazoo Chain Co.
 Non Skid Co. of America, 9 Norwich St., Worcester, Mass.
 Owen & Graham Co., 2843 E. Grand Blvd., Detroit, Mich. "Highway."
 Parker-Morse Co., 315 W. 15th St., Cincinnati, O.
 Peoria Mfg. Co., Lehman Bldg., Peoria, Ill.
 Pressed Steel Grip Co., Sixth St. & Grand Blvd., Pittsburgh, Pa.
 Prest-O-Grip—See Rowe Calk & Chain Co.
 Q-D—See Bear Mfg. Co.
 Reichert—See Imperial Bit & Snap Co.
 Reliable Unit Clamp Chain Co., 625 Wabasha St., St. Paul, Minn.
 Rido-Skid—See American Chain Co.
 Rixie Mfg. Co., 889 S. Pierce St., Milwaukee, Wis.
 Rowe Calk & Chain Co., Plantsville, Conn. "Prest-O-Grip."
 Sala Co., Canton, O.
 Saltzman Co., DeWitt G., 265-67 Park St., New Haven, Conn. "Holmes."
 Scharrow Mfg. Co. (So. Milwaukee) Milwaukee, Wis. "Kiff-On."
 Spider—See Dow & Cole.
 Standley Skid Chain Co., Boone, Ia. (See page 381.)
 Standard Non-Skid Grip Co., 293 Halsey St., Newark, N. J.
 Staples & Seefeld, M. & M. Bank Bldg., Milwaukee, Wis. "Loktite."
 Stice—See Tama Non-Skid Co.
 Stubbs & Co., C. C., 304 Fowler St., Waterloo, Iowa.
 Tama Non-Skid Co., Tama, Ia. "Stice."
 Trax-Yun—See Cleveland Chain & Mfg. Co.
 Truck Parts & Foundry Co., Alma, Mich. "Bradley."
 Union—See Channon Mfg. Co.
 Union Chain Co.—See United Sales Co.
 United Sales Co., 510 Temple Ct., Minneapolis, Minn. (Sole Distributors for Union Chain Co., Minneapolis, Minn.)
 United States Chain & Forging Co., Thompson Ave., Pittsburgh, Pa.
 Upton Co., Curwensville, Pa.
 Weed—See American Chain Co.
 Will-Burt Co., Orrville, O. "Easyroll."
 Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y. "Eason," "Kant-Skid."

CHAINS, TIRE—See Chains, Non-Skid

CHAINS, TOW—See Ropes or Chains, Tow

CHAIRS, FOLDING—See Seats, Supplementary

CHAMFERING MACHINES—See Machines, Gear Tooth Chamfering

CHAMOIS—See Sponges and Chamois

CHANGERS, TIRE—See Machines, Tire Removing and Replacing

CHANNEL STEEL—See Steel, Angle

CHANNELS, PRESSED STEEL — See Frames, Pressed Steel

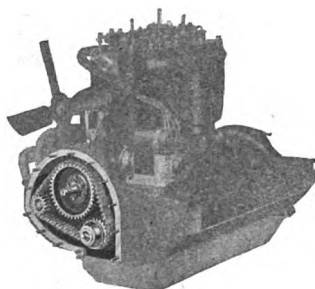
CHARGERS, BATTERY — See Magneto and Dynamos; also Generators, Battery Charging; also Rectifiers, Alternating Current; also Rheostats, Charging; also Systems, Electric Lighting

Everything is listed under the NOUN or principal word

*The Sign of
Efficiency*

*The Sign of
Durability*

MORSE



DRIVES

*Positive as
Gears*

*Flexible as
a Belt*

Longer Life

It is not hard to understand why the MORSE Silent Front End Chain Drive has become known all over the world as the superior long life, accurate chain.

The reason is simple: the ability of this chain to remain at its best for long periods without the need of expert attention.

The users of Front End Accessory Drives have learned that this unusual quality means faithful, efficient service from the Car or Truck.

They also find MORSE Silent Chains a source of great and lasting economy.

Write us your Front End problems
There is a MORSE CHAIN DRIVE Remedy

*Our Engineering Department will be pleased
to submit definite proposals with details and
drawings to meet any special requirements.*

Address Detroit Office

THE MORSE FRONT END DRIVE IS GRADUALLY SUPERSEDING ALL OTHER FORMS OF CAM AND ACCESSORY DRIVES. COLLECT YOUR DATA NOW.

MORSE CHAIN CO., *Largest Manufacturers of
silent chains in the world* **Ithaca, N. Y.**

Detroit, Mich.—Cor. 8th and Abbott Sts.

Please mention The Automobile Trade Directory

CHARGERS, Magneto Magnet*(For remagnetizing magneto magnets)*

- Auto Electrical Maintenance Co., 943 Chestnut Ave., Cleveland, O. "La Fer."
 Cowie Electric Co., E. S., 1818 McGee St., Kansas City, Mo.
 Durham Co., P. J., 244 W. 49th St., New York, N. Y.
 Ecco—See Electric Equipment Co.
 Electric Equipment Co., 1240 S. Hope St., Los Angeles, Cal. "Ecco."
 Esterline Co., 227 E. South St., Indianapolis, Ind.
 F. F.—See France Mfg. Co.
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
 France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."
 Gund Mfg. Co., La Crosse, Wis.
 La Fer—See Auto Electrical Maintenance Co.
 Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.
 Morgan, C. W., 1336 Michigan Ave., Chicago, Ill.
 Peco—See Phillips & Co.
 Phillips & Co., H. E., Union City, Ind. "Peco."
 Quality Electric Products Co., 907 E. 15th St., Kansas City, Mo. (See page 539.)
 R. & N.—See Randall & Noll.
 Randall & Noll, 317 S. 11th St., Lincoln, Neb. "R. & N."
 Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill.
 Teco—See Titan Engineering Co.
 Titan Engineering Co., 603 W. Pearl St., Union City, Ind. "Teco."
 Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 375.)
 Vim Unit Remagnetizer, 6 Smith St., Paterson, N. J.

CHARGERS, Magneto Magnet, for Fords*(For remagnetizing magneto magnets)*

- Auto Electrical Maintenance Co., 943 Chestnut Ave., Cleveland, O. "La Fer."
 Benjamin Electric Mfg. Co., Chicago, Ill. (See pages 181 and 529.)
 Berkshire Magneto Co., 70 West St., Pittsfield, Mass.
 Electro Rectifier Co., 739 Polk St., San Francisco, Cal.
 Foehl, G. A., Paterson, N. J. "Vim."
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
 La Fer—See Auto Electrical Maintenance Co.
 Lectro Mfg. & Sales Co., 1348 N. Clark St., Chicago, Ill.
 Midway Mechanical Co., St. Paul, Minn.
 Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.
 Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 897.)

CHARGERS, STORAGE BATTERY FOR FORDS—See Rectifiers, Alternating Current

CHARGING APPARATUS—See Generators; also Ammeters; also Panels; also Plugs; also Rectifiers; also Rheostats

CHARGING CONNECTORS, STORAGE BATTERY—See Connectors, Storage Battery Charging**CHART HOLDERS, AIRCRAFT—See Holders, Aircraft Chart****CHARTS, Electric Wiring**

- Ambu—See American Bureau of Engineering.
 American Bureau of Engineering, Michigan Ave. & 10th St., Chicago, Ill. "Ambu." (See page 659.)
 Automotive Publishing Co., 442 S. Dearborn St., Chicago, Ill. (See page 153.)
 Michigan State Auto School, 3729 Woodward Ave., Detroit, Mich. (See page 153.)

CHASSIS ADAPTERS—See Converters, Chassis**CHASSIS CONVERTERS—See Converters, Chassis****CHASSIS LUBRICATING SYSTEMS—See Systems, Chassis Lubricating****CHAUFFEUR'S TELEPHONES—See Telephones, Limousine****CHECK VALVES—See Valves, Angle; also Valves, Ball Check; also Valves, Engine****CHECKS, Brass, Time, Tool and Pay**

- Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.
 Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
 Murdock Co., James W., 116 Opera Pl., Cincinnati, O.
 Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.
 Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 897.)
 Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 237.)
 Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

CHECKS, Clutch

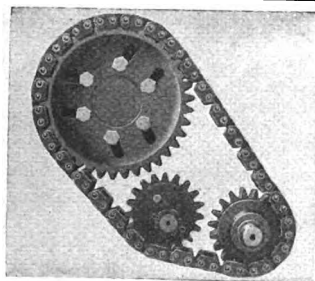
Schooler Co., O. E., Webb City, Mo.

CHECKS, PAY—See Checks, Brass, Time**CHECKS, Steering Gear**

(Spring or friction attachments for steering gear to eliminate side sway and reduce the shock transmitted to the steering wheel by the road wheels)

- Balcrank—See Cincinnati Ball Crank Co.
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 289.)
 Cooper Auto Supply Co., N. Broad St., Thomasville, Ga.
 Dennis Shock Absorber Co., Waukesha, Wis.
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Saf-Gide."
 F. M. F.—See International Sav-A-Life Fender Co.

Everything is listed under the NOUN or principal word



LINK-BELT SILENT CHAIN

For motor front end drives—a positive yet flexible drive, quiet in its operation, equipped with a tightener that automatically keeps just the right operating tension on the chain at all times.

Write for Catalog No. 445

LINK-BELT COMPANY
INDIANAPOLIS, IND.

SUPERIOR Seal and Stamp Co.

151 E. Jefferson Ave.
DETROIT, MICH.

Seals — Stencils
Steel Stamps
Rubber Stamps

Tool Checks
Trade
Checks

Employees'
Identification
Badges



SMALL
METAL
STAMPINGS

Any one of the following conveniently located distributors can supply you with genuine Baldwin Chains and sprockets in sizes to fit any truck.

Boston, Mass.
Walter H. Williams,
175 Massachusetts Ave

Buffalo, N. Y.
Baldwin Service Co.,
262 Oak Street,
Pierce J. Fleming, Mgr.

Chicago, Ill.
W. D. Foreman, 22 E. 18th St.
Cincinnati, Ohio

Wirthlin-Mann Co.,
318-320 West Third St.

Cleveland, Ohio
Chain & Sprocket Service Co.

1794 East 53th St.
Detroit, Mich.

Baldwin Service Co.,
8641 Woodward Ave.

Kansas City, Mo.
Motor & Machinists Supply Co.
1617 Grand Ave.

The Faeth Company
1117-1131 W. Eight St.

Los Angeles, Cal.
Colyear Motor Sales Co.,
1222-1228 South Hill St.

Minneapolis, Minn.
Baldwin Service Co.
39 South 11th St.

New Orleans, La.
M. H. Rykoski, 706-708 Julia St.

New York City
C. D. Schmidt Co., 276 Canal St.
Philadelphia, Pa.

N. A. Petry Co., Inc.
328-334 North Randolph St.

Portland, Oregon
H. W. Sharp Co., 68-70 First

Providence, R. I.
Lanphear Motor Car Co.,
17 Snow St.

San Francisco, Cal.
The Adam-Hill Co.,
96 Ninth St.

Seattle, Wash.
Wade & Co., 1423 Twelfth Ave.
St. Paul, Minn.

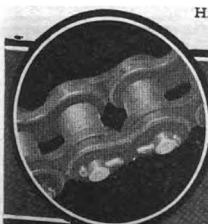
C. J. Smith Co., 155 W. Fifth St.

St. Louis, Mo.
American Automobile and Supply Co.
3200 Locust St.

Montreal, Toronto, Winnipeg, Canada
Lyman Tube & Supply Co., Limited

BALDWIN CHAIN & MFG. CO., WORCESTER, MASS.

H. V. GREENWOOD, General Western Representative
Peoples Gas Building, Chicago, Ill



GENUINE
BALDWIN
CHAINS

Please mention The Automobile Trade Directory

CHECKS, Steering Gear (Continued)

Houseman, Wm. H., Chatham, N. Y. "Little Steersman."
 International Sav-A-Life Fender Co., Guardian Bldg., Cleveland, O. "F. M. F."
 Little Steersman—See Houseman, Wm. H.
 Soo-Saf-Glide—See Esner Mfg. Co.

CHECKS, Steering Gear, for Fords

(Spring or friction attachments for steering gear to eliminate sideways and reduce the shock transmitted to the steering wheel by the road wheels)

Accesso Mfg. Co., 99 State St., Boston, Mass. (Sole Distributors for D. & O. Co., Boston, Mass. (See Page 239).
 A. S. B.—See Burnell Engineering Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Liti Sho Fur."
 Anderson—See Motor Device Co.
 Badger—See Safety Appliance Co.
 Bailey Co., W. J., Newark, N. J.
 Bayne Mfg. Co., Bushnell, Ill. "Pilot." (See page 689).
 Burnell Engineering Co., 536 E. Water St., Milwaukee, Wis. "A. S. B."
 Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Comfort Motor Machine Co., 715 Galapago St., Denver, Colo.
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 171).
 D. & O. Co.—See Green Sales Corp.
 Danvers Specialty Co., Danvers, Ill.
 Dennis Shock Absorber Co., Waukesha, Wis.
 Drive-Rite—See Economy Gas Lamp Co.
 Driveeaser—See Frazier & Co.
 Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)
 Economy Gas Lamp Co., 316-17 Goodrich Pl., Kansas City, Mo. "Drive-Rite."
 Frazier & Co., W. S., Aurora, Ill. "Driveeaser."
 Handee—See Racine Handy Mfg. Co.
 Hanten Machine Co., Watertown, S. Dak.
 Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill.
 Hastings Mfg. Co., 38 Mill St., Hastings, Mich. (See page 573).
 Houseman, Wm. H., Chatham, N. Y. "Little Steersman."
 Ideal Mfg. Co., 14th & Harrison Sts., North Kansas City, Mo.
 Ideal Mfg. Co., 1625 Main St., Anderson, Ind.
 Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.
 K-L-K—See Klokhaefer Mfg. Co.
 Kantlock—See Servis Specialty Mfg. Co.
 Klokhaefer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis. "K-L-K." (See page 891).
 L-A—See Lockwood-Ash Motor Co.
 Lanshield Mfg. Co., 510 First Ave., West Haven, Conn. "Steady Steersman."
 Liti Sho Fur—See American Automobile Accessories Co.
 Little Steersman—See Houseman, Wm. H.
 Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich. "L-A."
 Marvel Auto Specialties Corp., 149-51 Oak St., Buffalo, N. Y.
 Meixell Co., Ohio & Meridian Sts., Indianapolis, Ind. "Overland."
 Miller & Co., Spring Valley, Ill.

Modern Auto Appliance Co., Chatham, N. Y. "Little Steersman."
 Motor Device Co., Anderson, Ind. "Anderson."
 Overland—See Meixell Co.
 Philadelphia Auto Safety Steering Device Co., 1023 Arch St., Philadelphia, Pa.
 Pilot—See Bayne Mfg. Co.
 Protecto—See Robinson Motor Truck Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Robinson Motor Truck Co., 141 N. Ninth St., Minneapolis, Minn. "Protecto."
 Round Robbin—See V Air Valve & Mfg. Co.
 Rounds & Co., C. C., Dow, Ia.
 Safety Appliance Co., 515-17 Broadway, Baraboo, Wis. "Badger."
 Savidge Co.—See Eclipse Mfg. Co.
 Saxton Auto-Accessory Co., 25 W. 33rd St., New York, N. Y.
 Servis Specialty Mfg. Co., 627 Clara Ave., St. Louis, Mo. "Kantlock."
 Sieverkrapp Engine Co., De Koven & N. W. Tracks, Racine, Wis. "Steer-Adius."
 Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.
 Steady Steersman—See Lanshield Mfg. Co.
 Stear-Safe—See Universal Products Co.
 Steer-Adius—See Sieverkrapp Engine Co.
 Steer Relief—See Strong Metal Products Co.
 Steer-Ezer—See Walker Mfg. Co.
 Steerautomat Co., Rockford, Ill.
 Strong Metal Products Co., 1011-51 Power Ave., N. E., Cleveland, O. "Steer Relief."
 Twin-Rim Co., Everett, Mass.
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Stear-Safe."
 V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo. "Round Robbin."
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Steer-Ezer."

CHECKS, TIME—See Checks, Brass Time

CHECKS, TOOL—See Checks, Brass Time

CHEMICAL FIRE TANKS—See Tanks, Chemical Fire

CHEMICAL PLATING COMPOUNDS—See Compounds, Chemical Plating

CHEMICALS, RUST PREVENTING—See Compounds, Rust Preventing and Removing

CHIMES, EXHAUST—See Horns, Exhaust

CHISELS, CAPE—See Chisels, Cold and Cape

CHISELS, Cold and Cape

Atha Tool Co., Chapel St., Newark, N. J.
 Beall Bros., Fourth St., Alton, Ill.
 Bicknell Mfg. & Supply Co., 32 N. Academy St., Janesville, Wis.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Buck Bros., Millbury, Mass.
 Buffum Tool Co., Louisiana, Mo. (See page 395).
 Carver Tool Works, Spring Valley, N. Y.
 Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Everything is listed under the NOUN or principal word



D & O SAFETY STEERING CONTROL

Not a new idea but positively the best of those now on the market. Correctly designed—carefully made. Simple in construction and easily attached. Will outlast your car. Effects a considerable saving on tires and wear on pins and bushings. Keeps your car from creeping on crowded roads. Saves strain on arms and shoulders caused by tight grip of steering wheel. Car can be steered by one hand. Permits car or truck to be driven faster, easier and more safely. Eliminates weaving motion of front wheels.

As necessary as your windshield and sold under a MONEY BACK GUARANTEE if not satisfactory in every way.

LIST PRICE \$5.00

ACCESSO MFG. COMPANY

Successor to

GREEN SALES CORP.

99 State St.

Boston, Mass.

O. K. GIANT STORAGE BATTERIES

Points of Superiority Which Are Startling

- 1 20 per cent more power
- 2 Fires more intense spark
- 3 More mileage per gallon of gas
- 4 No corrosion
- 5 No sulphation
- 6 Will not heat up
- 7 No repair bills
- 8 No attention required
- 9 Will not freeze
- 10 No repairs
- 11 No buckled plates
- 12 Fool proof
- 13 Battery troubles ended
- 14 Price the same

O. K. GIANT BATTERY CORP.

PLANT AND GENERAL OFFICES

GARY

INDIANA

ENSIGN

More Power—Greater Flexibility and Economy
with New STARTING DEVICE for POOR fuel

For Manufacturers—Performance and Price
For Resale Trade—Performance and Profit

Information and Shipment from nearest branch

ENSIGN CARBURETOR CO

Makers of Carburetors for All Internal Combustion Engines

LOS ANGELES
East 17th St.

CHICAGO
2900 So. Michigan Ave.

SEATTLE, WASH.
309 E. Pine St.

CARBURETORS

Please mention The Automobile Trade Directory

CHISELS, Cold and Cape (Cont'd)

Cushman Co., Inc., Champaign, Ill.
(See page 479.)
Drew & Co., C., Kingston, Mass.
Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
Harrold Tool & Forge Co.—See Wiebusch & Hilger.
Hargrave—See Cincinnati Tool Co.
Hubbard & Co., 624 St. & A. V. R. R., Pittsburgh, Pa.
K. & B.—See Kilborn & Bishop Co.
Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Sillex," "K. & B."
Klein-Logan Co., S. 18th & Breed Sts., Pittsburgh, Pa.
Kortick Mfg. Co., 345 First St., San Francisco, Cal.
Kraeuter & Co., Newark, N. J.
(See page 1001.)
Lowentraut Mfg. Co., P., 36-54 Brenner St., Newark, N. J.
Marcy Tool Works, Putnam, Conn.
Maximus—See Taunton Tool Co.
Mayhew Steel Products Co., 291 Broadway, New York, N. Y.
Milwaukee Tool & Forge Co., 230 Becher St., Milwaukee, Wis.
Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo.
(See page 1011.)
Ohio Tool Co., Charleston, W. Va.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Red Head—See S. & I. Co.
S. & I. Co., 55-57 Governor St., Springfield, Mass. "Red Head."
Sharpnery—See Smith & Co.
Sillex—See Kilborn & Bishop Co.
Smith & Co., H. D., Plantsville, Conn. "Sharpnery."
Smith & Hemenway, 130 Colt St., Irvington, N. J.
Snell Mfg. Co., Fiskdale, Mass.
Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.
Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
Taunton Tool Co., 49 Adams St., Taunton, Mass. "Maximus."
Tuck Mfg. Co., 74 Ames St., Brockton, Mass.
V. & B.—See Vaughan & Bushnell Mfg. Co.
Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."
Verona Tool Works, Oliver Bldg., Pittsburgh, Pa.
Viechek Tool Co., Cleveland, O.
Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

CHOCKS, Blocks and Clamps, Car Shipping

Carbo Steel Products Co., 2600 W. 111th St. (Morgan Park), Chicago, Ill.
Rohr Traction Block Co., First Ave. N. & Third St., Kenmare, N. D.

CHROME NICKEL STEEL—See Steel, Chrome Nickel**CHROME, STEEL—See Steel, Chrome****CHUCKING GRINDERS—See Grinders, Chucking****CHUCKS, Boring Mill**

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Meyers Co., W. F., 18th & J Sts., Bedford, Ind.
Union Mfg. Co., 296 Church St., New Britain, Conn.

CHUCKS, Drill

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
American Machine Co., 104 Wellington St., Hartford, Conn. "Ellison."
Cushman Chuck Co., 806 Windsor St., Hartford, Conn.
Detroit Twist Drill Co., Detroit, Mich. "Graham." (See page 777.)
Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Etico."
Ellison—See American Machine Co.
Etico—See Eastern Tube & Tool Co.
Goodell-Pratt Co., Greenfield, Mass.
Graham—See Detroit Twist Drill Co.
Horton & Son Co., E., Windsor Locks, Conn. "Morrow."
Jacobs Mfg. Co., Hartford, Conn. (See page 241.)
Little Giant—See Westcott Chuck Co.
McCrosky Tool Corp., Meadville, Pa. "Wizard."
Magic—See Modern Tool Co.
Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.
Millers Falls Co., Millers Falls, Mass. "Star."
Modern Tool Co., State & Second Sts., Erie, Pa. "Magic."
Morrow—See Horton & Son Co.
Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
National—See Oneida National Chuck Co.
Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
Pratt-Oneida—See Pratt Chuck Co.
Presto—See Whitney Mfg. Co.
Skinner Chuck Co., 344 Church St., New Britain, Conn.
Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
Star—See Millers Falls Co.
Trump Bros. Machine Co., Beach & Anchorage Sts., Wilmington, Del.
Union Mfg. Co., 296 Church St., New Britain, Conn.
Wahlstrom Tool Co., 5530 Second Ave., Brooklyn, N. Y.
Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)
Westcott Chuck Co., E. Walnut St., Oneida, N. Y. "Little Giant."
Whitney Mfg. Co., Hartford, Conn. (See page 233.)
Whitton Machine Co., D. E., 190 Howard St., New London, Conn.
Wizard—See McCrosky Tool Co.

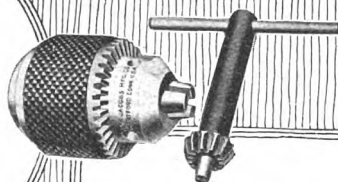
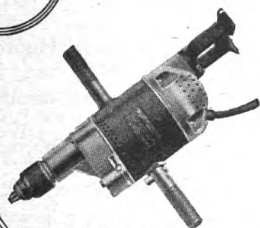
Everything is listed under the NOUN or principal word

PRODUCTION FOUNDRIES COMPANY

ANN ARBOR, MICHIGAN

*An Expert Organization Specializing in
Quantity Production of*

**QUALITY
GRAY IRON CASTINGS**



In the Repair Shop

Part of every repair shop's equipment should be a good portable drill — one of the sort that is equipped exclusively with Jacobs Chucks.

The JACOBS MFG. CO. Hartford, Conn.

STANDARD FOUNDRY COMPANY

MANUFACTURERS

Automobile, Truck, Tractor, Aeroplane and Marine

CYLINDER CASTINGS

"The Cylinder Foundry"

RACINE

WISCONSIN

Please mention The Automobile Trade Directory

CHUCKS, Lathe

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 Barker—See Thomas Elevator Co.
 Cushman Chuck Co., 806 Windsor St., Hartford, Conn.
 F-W—See Torkelsen & Wennberg.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn. "Sweetland."
 Horton & Son Co., E., Windsor Locks, Conn.
 Millers Falls Co., Millers Falls, Mass. "Star."
 National—See Oneida National Chuck Co.
 Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
 Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
 Pratt-Oneida—See Pratt Chuck Co.
 Skinner Chuck Co., 344 Church St., New Britain, Conn.
 Star—See Millers Falls Co.
 Sweetland—See Hoggson & Pettis Mfg. Co.
 Thomas Elevator Co., 30 S. Hoyne Ave., Chicago, Ill. "Barker."
 Torkelsen & Wennberg, 326 A St., Boston, Mass. "F-W."
 Trump Bros. Machine Co., Beech & Anchorage Sts., Wilmington, Del.
 Union Mfg. Co., 296 Church St., New Britain, Conn.
 Westcott Chuck Co., E. Walnut St., Oneida, N. Y.
 Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

CHUCKS, Magnetic

D. & W. Fuse Co. (Elmwood Sta.), Providence, R. I.
 Heald Machine Co., Worcester, Mass. (See page 471.)
 Kar Engineering Co., 79 E. 130th St., New York, N. Y.
 Simmons—See Taft-Pierce Mfg. Co.
 Taft-Pierce Mfg. Co., Woonsocket, R. I. "Simmons."
 Walker Co., O. S., Rockdale St., Worcester, Mass.

CHUCKS, Planer

Skinner Chuck Co., 344 Church St., New Britain, Conn.
 Union Mfg. Co., 296 Church St., New Britain, Conn.

CHUCKS, Pneumatic

M. E. C.—See Manufacturers Equipment Co. Manufacturers Equipment Co., Waller Ave. & Fillmore St., Chicago, Ill. "M. E. C."

CIGAR ASH RECEIVERS—See Receptacles, Ash

CIGAR LIGHTERS—See Lighters, Electric, Cigar

CIRCLE CUTTERS—See Cutters, Washer or Gasket

CIRCUIT TESTING INSTRUMENTS—See Instruments, Electrical Circuit Testing

CIRCULAR GLASS CUTTERS—See Cutters, Circular Glass

CIRCULATING PUMPS—See Pumps, Water

CIRCULATION GAGES—See Gages, Water Circulation

CIRCULATION REGULATORS—See Regulators, Water Circulating

CLAMPS, BODY BUILDERS—See Clamps, Woodworkers

CLAMPS, BOW—See Holders, Top

CLAMPS, BOW, FOR FORDS—See Clamps, Top Bow

CLAMPS, CAR SHIPPING—See Checks, Car Shipping

CLAMPS OR FASTENERS, HOOD—See Fasteners, Hood

CLAMPS or Fasteners, Hood, for Fords

(For fastening down hoods—See also Anti-Rattlers, Hood)

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Giant."
 Davey—See Davidson, F. J.
 Davidson, F. J., 9683 Prairie Ave., Detroit, Mich. "Davey."
 Giant—See American Auto Products Co.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)
 Nelson Mfg. Co., A., 3700 Southport Ave., Chicago, Ill.

CLAMPS, Hose

(For Radiator Hoses or Tire Pump Tubing)

Acme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.
 Aco—See Asch and Co., Inc.
 Allen Mfg. Co., W. D., 566 W. Lake St., Chicago, Ill.
 American Brass Products Co., Pottstown, Pa.
 American Cushion Spring Co., Kalamazoo, Mich.
 American Stamping Co., 81 Burchard St., Battle Creek, Mich.
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Aco." (See page 243.)
 Bartlett Mfg. Co., 428 E. Lafayette Ave., Detroit, Mich. "Bellamy."
 Bellamy—See Bartlett Mfg. Co.
 Boston Woven Hose & Rubber Co., Cambridge, Mass.
 Brown Stamping Co., Toledo, O.
 Bull Dog—See Oliver Metal Stamping Co.
 Catelain Andrae G., 1446-48 Indiana Ave., Chicago, Ill.
 Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.
 Cooper Clamp Co., 737 Park Ave., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word



NECESSITIES

Complete Catalogs on Request

"FAWCO" Brands

Fuses—Bulk and Assorted
Ignition, Cables—Wire Assemblies
Red Seal Spark Plugs
Wrenches—
Flat—open end
Oil Cock
Socket—General purpose
Tubular, Spark Plug

DISTRIBUTORS of

Culver-Stearns—Electric Specialties
Eureka Valve Grinding Compound
Fitzgerald Gaskets, etc.
Ideal Hose Clamps
Tungsol Lamp Bulbs

J. H. FAW CO., 27 Warren Street, NEW YORK

Ideal Hose Clamps

Ideal Pump Bands

Ideal Slip Grip Terminals

Ideal Ring Terminals

**Ideal Dry Battery Slip Grip
Connectors**

**Ideal Front License
Brackets**

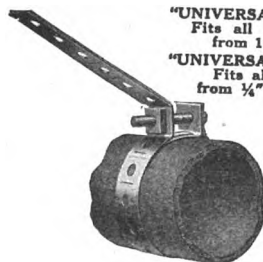
*Ideal Goods Are Standardized
in Size, Finish, Prices and
Fast Gaining Popularity*

IDEAL CLAMP MFG. CO.
198-202 Bradford St., Brooklyn, N. Y.

UNIVERSAL ADJUSTABLE HOSE CLAMP

"UNIVERSAL SENIOR"
Fits all size hose
from 1" to 3"

"UNIVERSAL JUNIOR"
Fits all sizes
from 1/4" to 1 1/4"



Let your next order be for the "UNIVERSAL" and be convinced of its superiority

Manufactured by

Universal Industrial Corporation
Hackensack, New Jersey

DEPARTMENT OF SALES
Chicago, Ill., F. C. West Corporation
624 Michigan Boulevard
Philadelphia, Pa., T. Scott Eavenson
Penna. Building
Dallas, Texas, Harry Knight
Southwest Life Building



HOSE CLAMP

NO NUTS OR BOLTS — LEVER IS OPERATED
BY ONE FINGER
ADJUSTABLE — FOUR CLAMPS COVER ALL SIZES
PUT ON IN A MOMENT

aco products

ASCH AND COMPANY

16-24 W. 61st Street

Incorporated

NEW YORK



Please mention The Automobile Trade Directory

CLAMPS, Hose (Continued)

Crabill Hose Clamp Co., 310 Hamlin St., Battle Creek, Mich.
 D'Arcy Spring Co., Kalamazoo, Mich. (See page 897.)
 Davey—See Davidson, F. J.
 Davidson, F. J., 9688 Prairie Ave., Detroit, Mich. "Davey."
 Emco—See Stevens & Co.
 Fawcett Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Ideal Clamps.) (See page 243.)
 Federal Tin Co., 11 E. Barre St., Baltimore, Md.
 Flexo—See McChesney & Co.
 Flexo-Adjusto—See McChesney & Co.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Harrisburg Stamping Co., 61 Cumberland St., Harrisburg, Pa. "Lightning."
 Herz, 183 Locust Ave., New York, N. Y. "Lasso."
 Higgins Machine Works, 25 Keystone St., Buffalo, N. Y.
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 243.)
 Kennedy & Sons Revolving Hose Coupling Co., 2931 Fulton St., Chicago, Ill.
 Lasso—See Herz.
 Lightning—See Harrisburg Stamping Co.
 McChesney & Co., J. S., 145 W. Ohio St., Chicago, Ill. "Flexo," "Flexo-Adjusto."
 Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Newark Stamping & Foundry Co., Newark, O. "Thompson."
 Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill. "Bull Dog."
 On Quick—See Pennsylvania Stamping Co.
 Otis-Flagg Corp., 515 W. Market St., York, Pa. "Uniek."
 Pennsylvania Stamping Co., York, Pa. "On Quick."
 Presto—See Cooper Clamp Co.
 Schradler's Son, A., Brooklyn, N. Y. (See page 506.)
 Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)
 Stevens & Co., 375 Broadway, New York, N. Y. "Esco." (See page 201.)
 Thompson—See Newark Stamping & Foundry Co.
 Uniek—See Otis-Flagg Corp.
 United Steel & Wire Co., 27 Fonda Ave., Battle Creek, Mich.
 Universal Industrial Corp., Hackensack, N. J. (See page 243.)
 Yardon, Wm., Main & Center Sts., Fort Plain, N. Y.

CLAMPS, Machinists

Armstrong Bros. Tool Co., 804 N. Francisco Ave., Chicago, Ill. (See page 357.)
 Athol Machine Co., Athol, Mass.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
 Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.

Goodell-Pratt Co., Greenfield, Mass.
 Hargrave—See Cincinnati Tool Co.
 Le Count, Wm. G., Merritt St., South Norwalk, Conn.
 Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.
 Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
 Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.
 Starrett Co., L. S., Athol, Mass.
 Taylor Mfg. Co., James L., 198-28 Parker Ave., Poughkeepsie, N. Y.
 Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. (See page 1073.)

CLAMPS, Oxy-Acetylene Welders

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

CLAMPS, PISTON, FOR FORDS—See Vises, Piston**CLAMPS, ROPE—See Clamps, Wire Rope****CLAMPS, Special Cantilever Spring Support**

Covington Garage & Machine Co., Covington, Pa.
 Emco Mfg. Co., Binghamton, N. Y. "Taber." (See page 521.)
 Taber—See Emco Mfg. Co.

CLAMPS, Spring Repair

(For the temporary repair of broken leaf springs)

Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

CLAMPS, Storage Battery Holding Down

Rampco Electric Co., G. H., 13520 Euclid Ave., Cleveland, O.

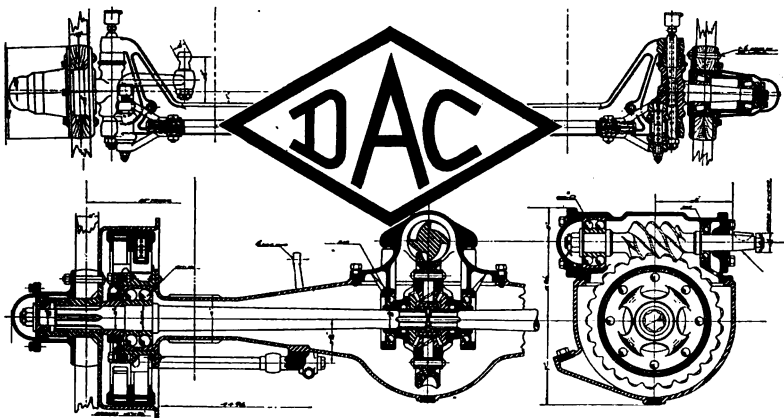
CLAMPS, TOP BOW—See Holders, Top**CLAMPS, Top Bow, for Fords**

(To take the place of the straps to hold down top)
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

CLAMPS, Transmission Band Assembling, for Fords

American Auto Products Co., 1219 L. St., N. W., Washington, D. C. "Jiffy."
 Hoof Tool Co., 532 Boston Block, Minneapolis, Minn.
 Jiffy—See American Auto Products Co.

Everything is listed under the NOUN or principal word



FRONT AND REAR AXLES

All our facilities are devoted to the single purpose of producing high-grade complete Axles—Front Axles and Rear Axles—for passenger cars and commercial vehicles.

D A C Axle Designs represent the best engineering practices of the day and our factory and tool equipment enables us to give automobile and truck manufacturers valuable help in engineering co-operation as well as in satisfactory strictly-on-schedule delivery service.

A large stock makes it possible for us to furnish promptly axles of various types for experimental and development purposes.

Correspondence Invited

DUNKIRK AXLE CORPORATION
DUNKIRK, N. Y.

Please mention The Automobile Trade Directory

CLAMPS, Transmission Drum Repairing for Fords—See **Clamps or Vises, Transmission Drum Repairing**

CLAMPS, Tube Splicing Mandrel

Peckstein Iron Works, Ninth & Johnson Sts., Keokuk, Ia.

CLAMPS or VISES, Transmission Drum Repairing for Fords

(Bench Clamp or Vise to hold drum when reaming bearing bushing; for Drum Holders for use with stationary reamer.—See Holders, Transmission Drum for Fords.)

American—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co.—See Fairbanks Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

CLAMPS, Wire Rope

(For Brake Cables)

Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.

Lans & Sons, Mathew, 2907 Carson St., Pittsburgh, Pa.

Roebbing's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.

Wilcox, Crittenden & Co., 1 S. Main St., Middletown, Conn.

CLAMPS, Woodworkers

Batavia Clamp Co., 85 Center St., Batavia, N. Y. "Colts."

C-S Co.—See Chapin-Stephens Co.

Chapin-Stephens Co., Pine Meadow, Conn. "C-S Co."

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Colts—See Batavia Clamp Co.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Eagle—See Woodruff & Sons Co.

Grand Rapids Hand Screw Co., 950 N. Front St., Grand Rapids, Mich.

Hargrave—See Cincinnati Tool Co.

Josef Mfg. Co., E. E., 14 Perry St., Buffalo, N. Y.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.

Mount Carmel—See Woodruff & Sons Co.

National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.

National Novelty Corp., New York, N. Y.

O'Neil, Jr., J. H., Pawtucket, R. I.

Ohio Tool Co., Charleston, W. Va.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

Palmer & Sons, Albert E., 313 W. Main St., Owosso, Mich.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Taylor Mfg. Co., James L., 108-23 Parker Ave., Poughkeepsie, N. Y.

Williams & Co., J. H., 88 Richard St., Brooklyn, N. Y. (See page 1073.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn. "Eagle," "Mount Carmel."

CLARIFIERS, Centrifugal

De Laval Separator Co., 165 Broadway, New York, N. Y.

CLARIFIERS, OIL—See **Separators, Oil**

CLEANERS, Acetylene Burner

Barnard Specialty Co., 3300 Maple Ave., Los Angeles, Cal.

Edelmann & Co. E., 2638 N. Crawford Ave., Chicago, Ill.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

CLEANERS, Air

(Device to attach to air intake of carburetors to remove sand and dust from the entering air)

Bennett—See Wilcox-Bennett Carburetter Co.

Bransford—See Malleable Iron Fittings Co.

Donaldson Engineering Co., 693 Raymond St., St. Paul, Minn.

F-S Machine Specialties, 171 Washington St., Newark, N. J. "Martian."

Pageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.

Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.

Leonard Air Washer Co., Kalamazoo, Mich.

Malleable Iron Fittings Co., Bransford, Conn. "Bransford." (See page 247.)

Martian—See F-S Machine Specialties.

Medway Sales Corp., Baker Bldg., Racine, Wis. "New Racine."

Midwest Engine Co., 1900 Martindale Ave., Indianapolis, Ind.

National Air Washer Co., Racine Wis.

New Racine—See Medway Sales Corp.

Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.

Parrett—See R-W Co.

Pomona—See Vortex Mfg. Co.

R-W Co., 332 Michigan Ave., Chicago, Ill. "Parrett."

Siphon—See Tractor Appliance Co.

Staynew Filter Co., Rochester, N. Y.

Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Siphon."

Twin Ports Steel & Tractor Co., 1713 Broadway, Superior, Wis.

Vortex Mfg. Co., 155 W. Commercial St., Pomona, Cal. "Pomona."

Wilcox-Bennett Carburetter Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CLEANERS, BURNER—See **Cleaners, Acetylene Burner**

Everything is listed under the **NOUN** or principal word

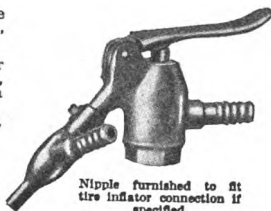
THE "BRANFORD" AUTO CLEANER

Every garage or factory needs one or more of these **AUTO CLEANERS**, because: It cleans wire wheels, hoods, tops and cushions.

It sprays priming coats of paint on running gear or bodies. It cleans motors, radiators, transmissions, etc.,—in a word, it has a hundred various uses around a garage or motor car factory.

Sells for only \$3 f. o. b. Factory or \$3.50 with 12" extension nozzle.

MALLEABLE IRON FITTINGS CO.
BRANFORD, CONN. U. S. A.



Nipple furnished to fit tire inflator connection if specified

BAIR

Bow Separating Top Holders

Malleable Iron Castings

Automobile Jacks

Body Irons & Fittings

Malleable Iron

Motor Car Parts

Manufactured by

Auto Specialties Manufacturing Co.
St. Joseph, Michigan

CANADIAN PLANT

Auto Specialties Mfg. Co. of Canada
Windsor, Ontario

= K. R. WILSON =

**Seven in One
Combination Machine**
For FORD MOTORS

Rebabbits } Crank Shaft Bearings
Rebores }
Reams }
Runs in Crank Shaft
REBORES CYLINDERS, any diameter
Two Position Motor Work Bench
Spotting-In Bar
One H. P. Motor for any operation
With All Attachments, \$365.00

K. R. Wilson Special Tools
Transmission Reaming Machine
Rear Axle Pinion Gear Press
Motor Stand Arbor Press
All Self Aligning Reamers
Spindle End Mill and Arbor
Propeller Shaft End Mill
and a tool for every so-called "hard job"
in Ford repairing
Descriptive Circular A2 will interest you

K. R. WILSON
10-16 Lock Street BUFFALO, N. Y.

Malleable Iron Castings

Quality Producers



Quantity Producers

VERMILION MALLEABLE IRON CO.
205 NORTH SIXTH AVENUE HOOPESTON, ILLINOIS
BRANCH OFFICES: 641 Railway Exchange Building, Chicago

Please mention The Automobile Trade Directory

CLEANERS, Celluloid

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "C-E-Z."
(See page 363.)

C-E-Z—See Adams & Elting Co.

Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylolust," "Xylonene."

Em-C-Lac Co., Smith St., Far Rockaway, N. Y.

Xylolust—See Dealers Motor Supply Corp.

Xylonene—See Dealers Motor Supply Corp.

CLEANERS, Engine

(For cleaning oil and grease from engines and chassis by a compressed air and gasoline or kerosene spray; for steam engine cleaners—See *Boilers, Steam Engine Cleaning*)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Wagner Cleaners.) (See page 243.)

Auto-Spray—See National Stamping & Electric Works.

Binks—See Star Brass Works.

Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O. "Eureka."

Cleveland Faucet Co., 703 Frankfort Ave., N. W., Cleveland, O.

Daniels Mfg. Co., Atchison, Kans.

Eureka—See Bishop & Babcock Co.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis. "Onceover."

National Stamping & Electric Works, 424 S. Clinton St., Chicago, Ill. "Auto-Spray."

Onceover—See Lipman Pump Works.

Romort Mfg. Co.—See Zinke Co.

Star Brass Works, 3120 Carroll Ave., Chicago, Ill. "Binks."

Stewart Mfg. Co., Oakland, Cal.
(See page 249.)

Wagner Specialty Co., 250 W. 54th St., New York, N. Y.

Zinke Co., 1823-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.)
(See pages 688 and 689.)

CLEANERS, Fabric

(Compounds for cleaning upholstery or slip covers; for vacuum cleaners—See *Cleaners, Vacuum*)

Harner Mfg. Co., E. C., 143 Pipestone St., Benton Harbor, Mich.

K-K-K—See Killen Chemical Co.

Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K."

Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.

Percama—See Perkins-Campbell Co.

Perkins-Campbell Co., Cincinnati, O. "Percama." (See page 115.)

Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.

Woodtite Laboratories, Modesto, Cal. "Textite."

CLEANERS, GENERATOR BRUSH FOR FORDS—See Sanders, Generator Brush**CLEANERS, Glass Wind Shield**

(For cleaning wind shield glass of snow or rain; for chemical cleaners or preventatives—See *Compounds, Glass Wind Shield*)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. "Klearsight." (See page 249.)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Clear Vision."
(See page 77.)

American Povar Corp., 536 W. 58th St., New York, N. Y. "Clerzit."

Anti-Dim—See Teeness Products Co.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)

Auto Scope—See White Products Co.

Big B—See Bruening Windshield Co.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

C-Clear—See Neu Metal Products Corp.

Clear-O-Scope Co., Angola, Ind. "Pioneer."

Clearview—See D'Eyrard, Louis.

Clear Vision—See American Automatic Devices Co.

Clerzit—See American Povar Corp.

Crescent—See Trico Products Corp.

Doughty Mfg. Co., 273-79 Lafayette St., New York, N. Y. "Storm King."

D'Eyrard, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview."
(See page 249.)

Folberth Auto Specialty Co., 7914-22 Lake Ave., Cleveland, O.

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)

H. & E. Co., 24 Porter St. (Jamaica Plains), Boston, Mass. "Windmill."

Handee—See Racine Handy Mfg. Co.

Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."

Hicks Mfg. Corp., 7508-13 Saginaw Ave., Chicago, Ill.

J. T. Auto Devices Co., 1517 Fairfield Ave., Cleveland, O.

Jiffy—See La Vietes Mfg. Co.

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb. "Safety-First."

K. M. Mfg. Co., Factories Bldg., Toledo, O.

Kirk-O Mfg. Co., Atlanta, Ga.

Klearsight—See Alcemo Mfg. Co.

La Vietes Mfg. Co., 103 Pine St., New Haven, Conn. "Jiffy."

Malco—See Malouf Co.

Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."

Masco—See Mayer Auto Accessories Corp.

Mayer Auto Accessories Corp., 452-54 Elliott Sq., Buffalo, N. Y. "Masco."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.

Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Tu-In-One."

Nagel Electric Co., W. G., Toledo, O.
(See page 425.)

Outlook Co., 5518 Euclid Ave., Cleveland, O.

Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."

Perko—See Perkins Marine Lamp Corp.

Pioneer—See Clear-O-Scope Co.

Presto-Felt Mfg. Co., Superior & Jackson Sts., Toledo, O.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Ran-E-Way—See Sunbeam Mfg. Co.

Safety-First—See Jubilee Mfg. Co.

Seco Mfg. Co., Nasby Bldg., Toledo, O. "Wizard."

See Safe—See Stadeker Metal Specialty Co.

Shi-Nup Products Co., 1130 Main St., Racine, Wis.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "See Safe."

Storm-King—See Doughty Mfg. Co.

Everything is listed under the NOUN or principal word



Clearview

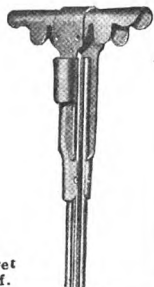
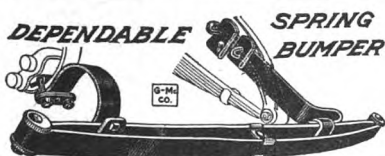
TRADE MARK REG. U.S. PAT. OFF.

Windshield Cleaner

"CLEARVIEW REGULAR"—a windshield cleaner.
"CLEARVIEW DUAL"—a combination of windshield cleaner and adjustable rear sight mirror.

Write for our proposition

LOUIS D'EYRAUD *Manufacturer* 452 West 16th Street
Los Angeles, Calif.

Bumpers For All Cars

also Radius Rod supports, Body and Fender Braces, Rear Axle Truss Rods, Radiator supports, Robe Rails, Petcock Wrenches, Fan Belt Guides, Radiator Drainers, Windshield Ventilating Attachments, Chassis Brackets, Top Holders, etc., etc.

ALL STEEL PRODUCTS SERVICEABLE—PROFITABLE

.....
Write for particulars
.....

On permanent exhibit at
1533 South Michigan Boulevard, Chicago, Ill

GAHM-McCORMICK CO.

Streator — 806 E. Main St. — Illinois

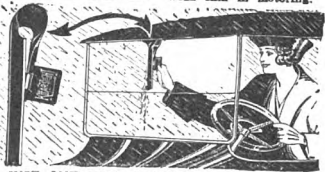


KOR-KER

**ELIMINATES
TIRE
TROUBLES**

Seals Punctures—
Stops Slow Leaks

Gives 50% more mileage.
Preserves tubes. 7 years' success in 40 countries.
Not a filler. Does not affect resiliency. Keeps tires fully inflated. Prevents rim cuts. Stops slow leaks. Is not a filler. Makes strong the weak link in motoring.



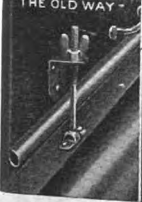
JUST ONE EASY MOTION ACROSS and the

Klear-Sight Windshield Cleaner

gives you a clean dry glass. Clings firmly to the shield. Ready for instant use. Made of sturdy steel with rubber squeegees. Handsome and durable. Heavily japanned. Drawn spring steel insures uniform contact over all.

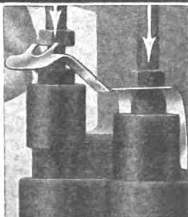
Alcemo Manufacturing Co., 120 Bridge St., Newark, N.J.

THE OLD WAY



WITH
STEWART ATTACHMENT






CHEVROLET NECESSITIES		STEWART
Stewart Spring Hood Clamps. . . .	List, \$1.50	MFG. CO.
Stewart Valve Tappet Silencers . . .	" 2.00	Incorporated
Stewart Gear Shift Anti-Rattler . . .	" .75	OAKLAND, CALIFORNIA

Please mention The Automobile Trade Directory

CLEANERS, Glass Wind Shield (Continued)

Sunbeam Mfg. Co., Poison Bldg., Seattle, Wash. "Ran-E-Way."
 Teeness Products Co., New York, N. Y. "Anti-Dim."
 Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 785.)
 Tribune Engineering Co., Front St., Oswego, N. Y.
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y. "Crescent."
 Tu-In-One—See Mosher, J. H.
 Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "U. S. A."
 U. S. A.—See Universal Safety Appliance Corp.
 Utility—See Hartenstein, R. P.
 White Products Co., 2204 S. Michigan Ave., Chicago, Ill. "Auto Scope."
 Windmill—See H. & E. Co.
 Wizard—See Seco Mfg. Co.

CLEANERS, Spark Plug

(For Spark Plug Brushes—See Brushes, Spark Plug)

Ace—See Wallace Mfg. Co.
 Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Champion Spark Plug Co., 802 Avondale Ave., Toledo, O. "Minute."
 (See page 727.)
 Markoni Co., 7 Davidson St. W., Detroit, Mich.
 Minute—See Champion Spark Plug Co.
 Moeller, J. F., 10822 S. Western Ave., Chicago, Ill. "Momaco."
 Momaco—See Moller, J. F.
 New York Mica Mfg. Co., 27 Clark St., Auburn, N. Y. "Wright."
 Wallace Mfg. Co., 239 Halsey St., Newark, N. J. "Ace."
 Wright—See New York Mica Mfg. Co.

CLEANERS, STEAM ENGINE—See Boilers, Steam Engine Cleaning

CLEANERS, UPHOLSTERY—See Cleaners, Fabric; also Cleaners, Vacuum; also Nozzles, Air

CLEANERS, Vacuum

Agar Sales Co., 1842 Spring Garden St., Philadelphia, Pa.
 Electric Vacuum Cleaner Co., Euclid & Ivanhoe Rd., Cleveland, O. "Handy Vac."
 Franklin Products, 1053 S. Clinton St., Syracuse, N. Y. "La France."
 Frantz Premier Co., 1111 Power Ave., N. E., Cleveland, O. "Handy."
 Handy—See Frantz Premier Co.
 Handy Vac—See Electric Vacuum Cleaner Co.
 La France—See Franklin Products.
 Van Auto Vacuum Co., 135 Hyde St., San Francisco, Cal.

CLEANERS, WIND SHIELD—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

CLEANING TOOLS—See Tools, Terminal Cleaning

CLEATS, Fibre Wiring

(See also Fibre, Hard)

American Vulcanized Fibre Co., 573 Equitable Bldg., Wilmington, Del. (See page 405.)
 Blake Signal & Mfg. Co., Boston, Mass. (See page 413.)
 Continental Fibre Co., Newark, Del. (See page 267.)
 Diamond State Fibre Co., Bridgeport, Pa.
 Franklin Products, 1053 S. Clinton St., Syracuse, N. Y.
 Hartson Co., L. M., North Windham, Conn.
 National Fibre & Insulation Co., Box 284, Yorklyn, Del. "S-S." (See page 405.)
 S-S—National Fibre & Insulation Co.
 Spaulding & Sons Co., J., Wheeler St., Tonawanda, N. Y.
 Standard Fibre Co., 11-15 Miller St., Somerville, Mass.
 Wilmington Fibre Specialty Co., Wilmington, Del. (See page 251.)

CLEATS, WIRING—See Cleats, Fibre Wiring

CLEVIS ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Brake Rod

CLEVIS PINS—See Pins, Aircraft Clevis

CLEVISES, AUTOMATIC TRACTOR RELEASE—See Hitches, Automatic Tractor

CLINCH RIVETS—See Rivets, Tubular and Clinch

CLINOMETERS, Airplane

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

CLIPPERS, Bolt and Rivet

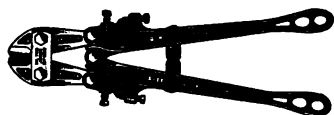
(Hand Power)

Allen-Randall—See Porter, H. K.
 Easy—See Porter, H. K.
 Elm City—See Schollhorn Co.
 Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.
 Mann Corp., Kankakee, Ill.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "New Easy."
 New Easy—See Metal Stamping Co.
 New Easy—See Porter, H. K.
 O. K.—See Porter, H. K.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Porter, H. K., Everett, Mass. "Easy," "New Easy," "Allen-Randall," "O. K." (See page 251.)
 Roberts Mfg. Co., Park & Beacon Sts., Somerville, Mass. "Victor."
 Schollhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Elm City."
 Victor—See Roberts Mfg. Co.

CLIPPERS, RIVET—See Clippers, Bolt and Rivet

Everything is listed under the NOUN or principal word

Trade
O. K.
Mark
CUTTERS

**10-Inch**

Clipper Cut Jaws,
for 3-16-in. annealed bolts in the
thread, or 3-16-in. soft rivets.

Center Cut Jaws,
for 3-16-in. soft rods.

14-Inch

Clipper Cut Jaws,
for 1-4-in. annealed bolts in the
thread, or 1-4-in. soft rivets.

Center Cut Jaws,
for 1-4-in. soft rods.

Insulated Handles if desired.

H. K. PORTER

EVERETT, MASS.

"Easy," "New Easy" and Allen Randall Bolt
Clippers

Automotive Equipment

Ford Specialties

As follows

Special Ratio Gears
Standard Gears
Taper Roller Bearings
Front and Rear Hubs
F. H. S.-Ball Thrust Bearings
Connecting Rods
Radius Rods
Radiators
Drive Shafts
Axle Shafts
Piston Rings

The Fulton-Houston Co.

1146 S. Michigan Blvd., Chicago, Ill.

We are the largest Manufacturers of Fibre Specialties in the world



We have a capacity of three million washers daily, one million handles, knobs, etc., and a million weekly capacity for various other fibre specialties.

In addition to this, we make at least one hundred thousand different kinds of FIBRE specialties a year, thus showing the versatility of our plant.

We are not only the largest manufacturers of FIBRE specialties in the world, but we have one of the most complete departments for working out ways that vulcanized fibre can be used in place of more costly material.

Get in touch with our nearest office today. They will immediately tell you if we can make your product of fibre in place of the more expensive product you are now using. This advice may save you thousands of dollars a year—it has for others, why not you?

District Sales Offices

Boston, Mass.	125 Kimball Bldg.
Chicago, Ill.	614 W. Adams Street
Cincinnati, Ohio	141 E. 4th Street
Cleveland, Ohio	225 Marion Bldg.
Denver, Colo.	426 Temple Court Bldg.
Detroit, Mich.	1002 Ford Bldg.
Los Angeles, Cal.	4th and Main, San Fernando Bldg.
Montreal, Canada	131-135 Youville Square
New York City	36 Warren Street
Philadelphia, Pa.	Bourse Bldg.
Pittsburgh, Pa.	209 Alpine Ave.
Portland, Ore.	Corbett Bldg.
Salt Lake City, Utah	1015 New House Bldg.
San Francisco, Cal.	Atlas Bldg., 604 Mission St.
Seattle, Wash.	2118 Smith Bldg.
St. Louis, Mo.	604 Federal Reserve Bank Bldg.
Home Office	Wilmington, Del.

**WILMINGTON FIBRE
SPECIALTY CO.**
Wilmington, Delaware

Please mention The Automobile Trade Directory

CLIPS, BATTERY CHARGING—See Clips, Electrical Test

CLIPS, BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down

CLIPS, Curtain

(For attaching curtains to wind shields and bow seats)

Anchor—See North & Judd Mfg. Co.
Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y. "Perfection."
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Perfection—See Metal Stamping Co.

CLIPS, Electrical Test

(For testing electrical circuits at any point without removing insulation from wires or disconnecting)

Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill. "Walker."
Buildog—See Reliable Mfg. Co.
Duchanols Electric Mfg. Co., C. F., 663 Bryson St., Youngstown, O.
F-F—See France Mfg. Co.
Frankel Display Fixture Co., 177 Hudson St., New York, N. Y.
France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F-F."
Hartung, Charles F., 108 W. Second St., Los Angeles, Cal.
Morse, Frank W., 289 Congress St., Boston, Mass. "Eureka."
Mueller Electric Co., 2139-43 Fairmount Rd., Cleveland, O.
Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O. "Buildog."
Walker—See Automobile Ignition Supply Co.

CLIPS, Fuse

Mutual Electric & Machine Co., 858 W. Fort St., Detroit, Mich.

CLIPS, HAT—See Hangers, Hat

CLIPS, Motorcycle Toe

Torrington Co., Torrington, Conn.

CLIPS, Spring

(See also Forgings, Drop)

Bonney Forge & Tool Works, Allentown, Pa.
Brewer Tiehener Corp., Cortland, N. Y. (See page 573.)
Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.
Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
Columbus Bolt Works Co., Columbus, O. (See page 147.)
Steel Forgings Co., Brotherton Rd., Cincinnati, O.
Stribley & Foote Co., 301 Ogden St., Newark, N. J.
Union Forging Co., Union, N. Y. (See page 253.)

CLIPS, TEST—See Clips, Electrical Test

CLIPS, TOE—See Clips, Motorcycle Toe

CLIPS, Trimmers

Buser-Poston Tufting Machine Co., Chillicothe, O.
Staples & Hanford Co., Newburgh, N. Y.

CLOCK DIALS—See Dials, Luminous

CLOCKS, Aircraft

Chelsea Clock Co., 10 State St., Boston, Mass.
Ingersoll & Bros., Robert H., 30 Irving Place, New York, N. Y.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)
Thomas Clock Co., Seth, 19 W. 44th St., New York, N. Y.
Waltham Watch Co., Waltham, Mass.
Wittnauer Co., A., 30 W. 38th St., New York, N. Y.

CLOCKS, DASH BOARD—See Clocks, Electrically Wound; also Clocks, Hand Wound

CLOCKS, Electrically Wound

(For mounting on dash or instrument boards; for Limousine Clocks—See Watches, Limousine; also Cases, Toilet)

Boston Clock Co., 10 State St., Boston, Mass.
Connecticut Clock Co., 89 Woodbine St., Hartford, Conn.

CLOCKS, Hand Wound

(For mounting on dash or instrument boards; See also Holders, Watch; for Limousine clocks—See Watches, Limousine; also Cases, Toilet)

Belmont—See New Haven Clock Co.
Boston Clock Co., 10 State St., Boston, Mass.
Chelsea Clock Co., 10 State St., Boston, Mass.
Cowl—See New Haven Clock Co.
Didisheim & Bro., Hipp, 26 W. 26th St., New York, N. Y. "Octo," "Hidico," "Wonsweek."
Duane—See New Haven Clock Co.
Glowrite—See J. F. Mansfield.
Hidico—See Didisheim & Bro.
Keyless Auto Clock Co., 246 W. 59th St., New York, N. Y.

Mansfield, J. F., 9 Maiden Lane, New York, N. Y. "Glowrite." (See page 749.)
Nebo—See New Haven Clock Co.
New Haven Clock Co., 133 Hamilton St., New Haven, Conn. "New Ormond," "Duane," "Belmont," "Nebo," "Cowl."
New Ormond—See New Haven Clock Co.
Octo—See Didisheim & Bro.
Peck-Hamre Mfg. Co., Berlin, Wis.
Sessions Clock Co., Forestville, Conn. (See page 253.)
Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)
Wonsweek—See Didisheim & Bro.

CLOCKS, Steering Wheel, for Fords

(See also Holders, Watch)

B-4-U—See Eisenstadt Mfg. Co.
Eisenstadt Mfg. Co., Olive & 18th Sts., St. Louis, Mo. "B-4-U."

Everything is listed under the NOUN or principal word

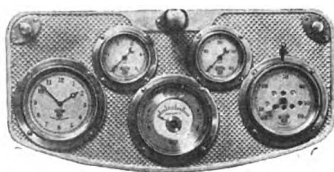


*Largest Makers of Auto Spring Clips
For Passenger Cars and Trucks*

The Union Forging Co.
Union, N. Y.



Made in England
**Profit Making
Motor
Accessories**



**Manufacturers of all
High-grade Automobile
Accessories and Aviation
Instruments.**

S. SMITH & SONS, INC.
J. H. BONE, VICE PRESIDENT
134 NASSAU ST. NEW YORK CITY

Guaranteed Popular Price Auto Clocks

*That will pay you a good profit and give
excellent satisfaction*



Made in one and eight day for cowl dash, also
models for Ford Cars—Let us send you discount
and circulars; they will interest you.

CLOCKS OF EVERY DESCRIPTION

Manufactured by

THE SESSIONS CLOCK CO
Forestville, Conn. 37 Maiden Lane, New York, N.Y.

PROPER TIMING MEANS BIGGER REPAIR PROFITS

The only way to get proper returns from your repair
work is to know the actual time consumed on each job.

Henry Kastens Time Stamps furnish an accurate rec-
ord of just how long each job takes—the correct basis for
repair charges.

It stops the mistakes, losses and complaints due to inaccurate
charges. Also useful for timing the arrival and departure of
rented cars, taxis, etc.

Made in several models to meet every requirement.

Write for booklet and prices.

HENRY KASTENS 419½ W. 27th St., New York City



Please mention The Automobile Trade Directory

CLOCKS, Time Recording and Watchman's

(For Time Stamps—See Stamps, Time)

Chicago Watchmans Clock Co., 1526 S. Wabash Ave., Chicago, Ill.
 Eco Clock Co., 200 Congress St., Boston, Mass.
 Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Hardinge Bros., 1770 Berteau Ave., Chicago, Ill.
 International Time Recording Co., Endicott, N. Y.
 Kastens, Henry, 419½ W. 27th St., New York, N. Y. (See page 253.)
 Newman Clock Co., 428 Broadway, New York, N. Y.
 Simplex Time Recorder Co., Time Ave., Gardner, Mass.

CLOCKS, WATCHMAN'S—See Clocks, Time Recording

CLOSETS, CLOTHES—See Lockers, Metal

CLOTH, ABRASIVE—See Paper, Emery and Sand

CLOTH, BRASS WIRE—See Cloth, Wire

CLOTH, BROAD—See Broadcloth

CLOTH, EMERY AND SAND—See Paper, Emery and Sand

CLOTH, Enameled

Armstrong Cork Co., 124 23d St., Pittsburgh, Pa.
 Chandler Oil Cloth & Buckram Co., East Taunton, Mass.
 Cook—See Heath & Son.
 Columbus-Union Oil Cloth Co., E. Seventh St. & Big 4 R.R., Columbus, O.
 Heath & Son, Edmund F., 235 Warren St., Newark, N. J.
 Landers Bros. Co., Dept. A2, Toledo, O. (See page 1049.)
 Meritas—See Standard Textile Products Co.
 Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
 Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.
 O'Bannon Corp., 200 Fifth Ave., New York, N. Y. (See page 255.)
 Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Standard Textile Products Co., 320 Broadway, New York, N. Y. "Meritas."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

CLOTH, LEATHER—See Leather, Artificial

CLOTH, Mohair

Autlux—See Midland Fabrics Co.
 Barrell Co. of New York, Wm. L., 50 Leonard St., New York, N. Y. "Wilbaco."
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 257.)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 165.)
 Bull Dog—See Muttly Co.
 Carr Co., F. S., 31 Beach St., Boston, Mass. "Neverleek."
 Chase & Co., L. C., 39 Franklin St., Boston, Mass. "Wexford."
 Haarts, J. C., 19 High St., Boston, Mass.
 Kantleak—See Scherer & Co.
 Laidlaw Co., 16 W. 30th St., New York, N. Y. "Limotex." (See pages 255 and 309.)
 Landers Bros. Co., Dept. A2, Toledo, O. (See page 1049.)
 Limotex—See Laidlaw Co.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. "Autlux." (See page 271.)
 Muttly Co., L. J., Boston, Mass. "Bull Dog." (See page 1005.)
 Neverleak—See Carr Co.
 Pickens Auto Cloth Co., 239 Fourth Ave., New York, N. Y. (Importers.)
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
 Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)
 Strongtex—See Strong Textile Co.
 Toledo Auto Fabrics Co., Toledo, O. (See page 257.)
 Weinberg & Co., S., 315 Fourth Ave., New York, N. Y.
 Wexford—See Chase & Co.
 Wilbaco—See Barrell Co. of New York.

CLOTH, Rubber Coated

Athol Mfg. Co., Athol, Mass. (See page 537.)
 Boston Woven Hose & Rubber Co., Cambridge, Mass. "Everdry," "Twintite."
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 257.)
 Carr Co., F. S., 31 Beach St., Boston, Mass. "Neverleek."
 Chase & Co., L. C., 39 Franklin St., Boston, Mass. "Drednaut."
 Cook—See Heath & Son.
 Drednaut—See Chase & Co.
 Dridek—See Muttly Co.
 du Pont de Nemours & Co., E. I. (Fabric-koid Div.), Wilmington, Del. "Fairfield," "Pontop," "Luxar." (See page 225.)
 Edlstone Fabric Co., Wm. W., 51 Char-don St., Cambridge, Mass. (Dealers.) (See page 537.)
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Everdry—See Boston Woven Hose & Rubber Co.
 Fairfield—See du Pont de Nemours & Co.
 Halotex—See Laidlaw Co.
 Heath & Son, Edmund F., 235 Warren St., Newark, N. J. "Cook."
 Hodgman Rubber Co., Tuckahoe, N. Y.
 Kantleak—See Scherer & Co.
 Kramer, Griffel & Rappaport, 148 W. 56th St., New York, N. Y.
 Laidlaw Co., 16 W. 30th St., New York, N. Y. "Graycloth," "Limotex," "Storm King," "Neutop," "Rubbertex." (See pages 255 and 309.)
 Landers Bros. Co., Dept. A2, Toledo, O. (See page 1049.)
 Luxar—See du Pont de Nemours & Co.
 Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.

Everything is listed under the NOUN or principal word

THE MARK *of* QUALITY

**O'BANNON
COATED
FABRICS**

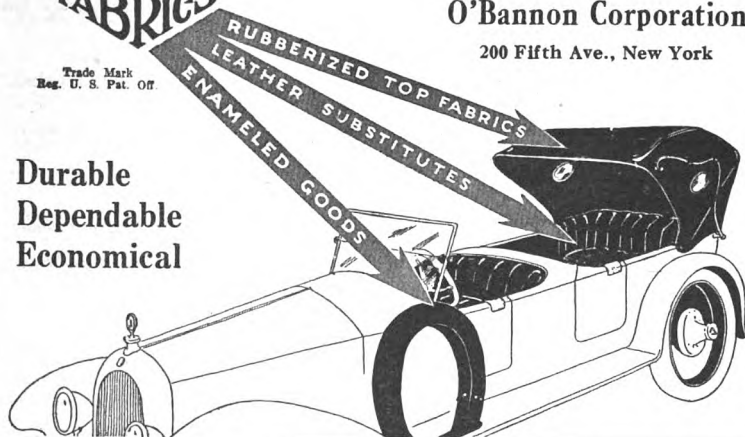
Trade Mark
Reg. U. S. Pat. Off.

Write for Samples

O'Bannon Corporation

200 Fifth Ave., New York

**Durable
Dependable
Economical**



*Laidlaw
Motor Car
Fabrics*

"Yards of Satisfaction" is the way an extensive user of Laidlaw Open Car Fabrics expressed his appreciation of the worth of this famous group:

*"Laidlaw Burbank" Top
Covering*

"Storm King" Top Covering

"Neutop" Top Covering

"Rubber Tex" Top Covering

"Limotex" Slip Cover Cloth

Laidlaw Leather Cloth

Laidlaw Hair Carpet

Laidlaw Slip Cover Cloth

THE LAIDLAW COMPANY, Inc.

16 West 60th Street

Chicago

Cleveland

Detroit

New York City

St. Louis

Please mention The Automobile Trade Directory

CLOTH, Rubber Coated (Continued)

Muttly Co., L. J., Boston, Mass. "Dridek."
(See page 1005.)
Neutop—See Laidlaw Co.
Neverleek—See Carr Co.
Newark Rubber Co., Schley St., Garfield, N. J.
O'Bannon Corp., 300 Fifth Ave., New York, N. Y. (See page 255.)
Onyxcloth—See Laidlaw Co.
Plymouth Rubber Co., 50 State St., Boston, Mass.
Pocono Rubber Cloth Co., Trenton, N. J. "Pocotex."
Pocotex—See Pocono Rubber Cloth Co.
Pontop—See du Pont de Nemours & Co.
Rubbertex—See Laidlaw Co.
Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
Seamans & Cobb Co., Boston, Mass.
(See page 514.)
Storm King—See Laidlaw Co.
Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex."
(See page 257.)
Strongtex—See Strong Textile Co.
Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
Toledo Auto Fabrics Co., Toledo, O.
(See page 257.)
Twintite—See Boston Woven Hose & Rubber Co.
United States Rubber Co., 1790 Broadway, New York, N. Y.
Vulcan Proofing Co., 58th St. & First Ave., Brooklyn, N. Y.

CLOTH, STRAINER—See Cloth, Wire

CLOTH TRIMMINGS—See Trimmings, Cloth and Carpet

CLOTH, UPHOLSTERY—See Cloth, Mohair; also Cloth, Enamel; also Cloth, Rubber; also Broadcloth; also Silk; also Whipcord

CLOTH, Wire

(For use in Strainers, Horn Screens, etc.)

Buffalo Wire Works Co., 431 Terrace, Buffalo, N. Y.
Cleveland Wire Cloth & Mfg. Co., 3573-31 E. 78th St., Cleveland, O.
De Witt Wire Cloth Co., 391 Broadway, New York, N. Y.
Howard & Morse, 45 Fulton St., New York, N. Y. "National."
Michigan Wire Cloth Co., 2100 Howard St., Detroit, Mich.
Multi-Metal Co., 251 W. 19th St., New York, N. Y.
National—See Howard & Morse.
Newark Wire Cloth Co., 224 Verona Ave., Newark, N. J.
New Jersey Wire Cloth Co., 613 S. Broad St., Trenton, N. J.
Tyler Co., W. S., Superior Ave. & E. 38th St., Cleveland, O.

CLOTHES LOCKERS—See Lockers, Metal Clothes

CLOTHING, Aviators

(See also Helmets; also Gloves and Mittens)

Abercrombie & Fitch Co., Madison Ave. & 45th St., New York, N. Y.
Dreadnought Safety Suit Co., 1858 Broadway, New York, N. Y.

International Coat Co., 114-16 Fifth Ave., New York, N. Y.
Loewenberg Co., 53-63 Cadden St., Newark, N. J.
Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.
Sims, Alfred Varley, 2 Rector St., New York, N. Y.
Spaulding & Bros., A. G., 126 Nassau St., New York, N. Y.
Taylor Co., Alex., 26 E. 42d St., New York, N. Y.
Tower Co., A. J., 24 Simmons St., Boston, Mass.

CLOTHING, Electrically Heated, Aviators

Simplex Electric Heating Co., 85 Sidney St., Cambridge, Mass.

CLOTHING, Motorists

(See also Caps; also Gloves; also Leggings; also Mufflers)

Accurate Cover Co., 273 Canal St., New York, N. Y. "Rubbertex," "Slipovers."
All-Over—See Ohio Overall Co.
Armi-Khaki—See Francau-Sweeney Co.
Auto-Shirt Co., Midland, Md.
Automobile Apparel Co., Bush Ave., Port Chester, N. Y.
Ballard & Co., J. O., Pine St., Malone, N. Y.
Beardsley & Haft Co., Columbus, O. "Slipovers." (See page 393.)
Beats All—See Standard Oiled Clothing Co.
Beaver Dam Overall Mfg. Co., 113 Rowell St., Beaver Dam, Wis.
Bishop Co., J. H., Wyandotte, Mich.
Blauvelt Knitting Co., 330-34 Plane St., Newark, N. J.
Boynnton's Improved Process Oil Clothing Co., Vincent St., Gloucester, Mass.
Bradley Knitting Co., Delavan, Wis.
Burlington Blanket Co., 711 Oregon St., Burlington, Wis.
Camden—See Goodrich Co.
Charat Co., 140 W. 34th St., New York, N. Y.
Chippewa Falls Woolen Mill, Chippewa Falls, Wis.
Comfort Auto Robe Co., Waterloo, N. Y.
Connecticut Coat & Cover Co., Shelton, Conn.
Coveralls—See Utility Garment Co.
Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.
Eloc—See Loewenberg Co.
Ellsworth & Thayer Mfg. Co., 324-40 Broadway, Milwaukee, Wis. "Great Western."
Everdri—See Loewenberg Co.
Everett Mfg. Co., Everett, Mass. "Everite."
Everite—See Everett Mfg. Co.
Faverite Knitting Mills, 1233 W. Sixth St., Cleveland, O.
Finck & Co., W. M., 3633 Gratiot Ave., Detroit, Mich.
Fitswell—See Niagara Fabric Mfg. Co.
Francau-Sweeney Co., 232 Fifth Ave., New York, N. Y. "Armi-Khaki."
Goodrich Co., B. F., S. Main St., Akron, O. "Camden."
Goodyear Rubber Co., 787 Broadway, New York, N. Y.
Great Western—See Ellsworth & Thayer Mfg. Co.
Guterman Bros., St. Paul, Minn.
Hall & Co., R. S., Versailles, O.

Everything is listed under the NOUN or principal word

BRADFORD FABRICS COMPANY

1753 - 55 Broadway

INCORPORATED

NEW YORK CITY

Manufacturers and Importers ofESTABLISHED 1918
Bradford Fabrics Company Inc.**SEALTEX Fabrics**ESTABLISHED 1918
Bradford Fabrics Company Inc.*For***Limousines, Sedans, Coupes, Touring Cars, Trucks and Aeroplanes**

36', 50' and 54'
FORD DRAB
AND WHITE BACK RUBBER

**Rubber-Coated Fabrics**

High-Grade Rubber—Whipcord
Bow Drill—Mohair—Roofing Duck

Single and Double Texture for Automobile
 Tops, Side Curtains, Etc. 36' to 60' Wide

Centrally Located for Middle West Shipments

THE TOLEDO AUTO FABRICS COMPANY
TOLEDO, OHIO

STRONG TEXTILE CO., Inc.

245 WEST 55th STREET
NEW YORK

PRODUCTION CLOTHS
TO MEET ALL REQUIREMENTS



QUALITY CLOTHS
FOR QUALITY CARS

TQP AND SLIP COVER MATERIALS—CARPETS, SILKS, PASSEMENTERIES

Please mention The Automobile Trade Directory

CLOTHING, Motorists (Continued)

Hill Mfg. Co., Richard F., 217-19 High St., Newark, N. J. "Kant Leak."
 Huchberger & Co., J., 98 Fifth Ave., New York, N. Y.
 Improved Mfg. Co., Ashland, O.
 International Coat Co., 114-16 Fifth Ave., New York, N. Y.
 Jaegers S. W. S. Co., 395 Fourth Ave., New York, N. Y.
 Kant Leak—See Hill Mfg. Co.
 Kenreign—See Kenyon Co.
 Kenyon Co., 754 Pacific St., Brooklyn, N. Y. "Kenreign." (See page 503.)
 Labor-Alls—See Ward Co.
 Lamm Bros., 339-41 N. Gay St., Baltimore, Md.
 Lee Mercantile Co., H. D., 22d & Gillham Sts., Kansas City, Mo. "Union-Alls."
 Loewenberg Co., 55-62 Colden St., Newark, N. J. "Everdri," "Elco."
 Longwool—See Wallace Co.
 McKibben, Driscoll & Dorsey, Fifth St. & Broadway, St. Paul, Minn.
 Manhattan—See Standard Oiled Clothing Co.
 Mann Co., Léon, 906 Broadway, New York, N. Y.
 Meier & Co., Louis, 1002-10 Central Ave., Indianapolis, Ind.
 Michigan Motor Garment Co., Greenville, Mich. "Outerall." (See page 259.)
 Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.
 Moore-Smith Co., 250 Devonshire St., Boston, Mass.
 Morawetz Co., 217-25 E. Water St., Milwaukee, Wis.
 New Process Co., Warren, Pa.
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y.
 Norman Garment Co., 32 Union Sq., New York, N. Y.
 Ohio Garment Co., (Automotive Dept.), Springfield, O.
 Ohio Overall Co., Wooster, O. "All-Over."
 Outerall—See Michigan Motor Garment Co.
 Oshkosh Overall Co., 23 Otter St., Oshkosh, Wis.
 Parker Co., John H., 25 James St., Malden, Mass.
 Patrick-Duluth Woolen Mills, Duluth, Minn.
 Toledo Coat Co., 25 Thorndike St., Cambridge, Mass.
 Pontiac Knitting Co., Pontiac, Mich.
 Powers Mfg. Co., Waterloo, Ia. "Suit-alls." (See page 581.)
 Protexall Co., 500 Pearl St., Abingdon, Ill. (See page 259.)
 Reliable Coat Co., 118 Blum St., Union Hill, N. J.
 Revillon Freres, 19 W. 34th St., New York, N. Y.
 Rosenwald & Weil, 2515 Armitage Ave., Chicago, Ill.
 Rubbertex—See Accurate Cover Co.
 Russits Fur Co., John, 7 E. 48th St., New York, N. Y.
 Sanders Co., 218½ Indiana Ave., Indianapolis, Ind.
 Scott & Co., 340 Washington St., Boston, Mass.
 Shanhouse & Sons, W., Rockford, Ill.
 Slipovers—See Accurate Cover Co.
 Slipovers—See Beardsley & Haft Co.
 Standard Oiled Clothing Co., 210 E. 152d St., New York, N. Y. "Beats All," "Manhattan."
 Suitalls—See Powers Mfg. Co.
 Tower Co., A. J., 24 Simmons St., Boston, Mass.

Union-Alls—See Lee Mercantile Co.
 Union Overall Co., 201 N. Madison St., Rockford, Ill.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Utility Garment Co., 200 N. Jefferson St., Chicago, Ill. "Coveralls."
 Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Longwool."
 Ward Co., C. E., 101-05 Williams St., New London, O. "Labor-Alls."
 Wisconsin Garment Co., 711 Origen St., Burlington, Wis. "Wisgar Co."
 Wisgar Co.—See Wisconsin Garment Co.

CLOTHS, POLISHING—See Wipers

CLOTHS, WIPING—See Wipers

CLUTCH CHECKS—See Checks, Clutch

CLUTCH COMPOUNDS—See Dressing, Clutch

CLUTCH CONTROLS FOR FORDS—See Controls, Tractor Clutch

CLUTCH COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Clutch

CLUTCH DISCS—See Discs, Steel Clutch; also Lining, Brake

CLUTCH DRESSING—See Dressing, Clutch

CLUTCH FACINGS—See Lining, Brake; also Leather, Friction

CLUTCH HOLDERS—See Holders, Clutch, for Fords

CLUTCH INSERTS—See Corks, Brake and Clutch

CLUTCH LININGS—See Lining, Brake; also Leather, Friction

CLUTCH PULLEYS—See Pulleys, Traction Friction Clutch

CLUTCH RELEASES FOR FORDS—See Releases, Clutch

CLUTCH SHAFTS—See Shafts, Transmission

CLUTCHES, Automobile Friction

Bierman—See Strite Governor Pulley Co.
 Borg & Beck Co., 920 S. Michigan Ave., Chicago, Ill. (See page 261.)
 C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill.)
 Chicago Machine & Motor Co., 1510-16 Clybourn Ave., Chicago, Ill.
 Claretto Mfg. Co., 1215-19 Fourth St., Milwaukee, Wis.
 Detlatf Co., A. J., 127 Lafayette Ave., Detroit, Mich.
 Detroit Accessories Corp., 8629 Gratiot Ave., Detroit, Mich.
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.

Everything is listed under the NOUN or principal word

One Piece Overalls With Many Advantages



Patented spring-back permits freedom of motion. "When you bend Protexall gives."

No straps, no coat to catch. Means safety and convenience.

Protected buttons avoid scratching of car or merchandise.

On top of all this Protexalls can be made to advertise your business with your name stitched right into the back with fast color thread.

A line of inquiry will bring you complete information.

The Protexall Company
500 Pearl Street Abingdon, Ill.

We Manufacture Cloth FOR Seat Coverings Head Linings Cloth Upholstery

Manufacturers and Mill Agents for:

Virginia Woolen Co.
The Bell Co.
Berkshire Woolen Co.
Berkeley Woolen Co.
Waucantuck Mills
Shetland Woolen Mills
Shetucket Worsted Mills
Clear Spring Worsted Mills
Smith Mills

TERHUNE, YERANCE & WOLFF
215 Fourth Avenue, NEW YORK



A Specially Designed Motor Garment

EXCLUSIVE features of comfort and convenience are found in Outerall one-piece motor garments. Extra yardage in sleeve and back allows free arm movement. The Outerall line contains the largest assortment of one-piece garments on the market. Demand keeps six Outerall factories busy. Manufacturing volume permits values that are unequalled. Let the nearest branch send latest samples.

**MICHIGAN MOTOR
GARMENT COMPANY**
Greenville, Mich.

New York, 377 Broadway
Chicago, 1016 Medinah Bldg.
Kansas City, 319 W. Ninth St.
Milwaukee, 606 Mayer Bldg.
Indianapolis, 466 Massachusetts Ave.
Des Moines, 607 Observatory Bldg.
Springfield, Mass., 147 Dwight St.

Outerall
The Economy Garment

Please mention The Automobile Trade Directory

CLUTCHES, Automobile Friction (Continued)

Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn.
Hele-Shaw—See Merchant & Evans Co.
 Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
 Hoosier Clutch Co., 718-34 S. Elliott St., Muncie, Ind.
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
 List Mfg. Co., E. J., Havana, Ill.
 M. & E.—See Merchant & Evans Co.
 Mechanics Machine Co.—See C. A. S. Engineering Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
 Strite Governor Pulley Co., 301 S. Third St., Minneapolis, Minn. "Bierman."
 Warner Gear Co., Muncie, Ind.
 (See page 447.)

CLUTCHES, Motor Boat Friction

(See also Gears, Motor Boat Engines)

Hoosier Clutch Co., 718-34 S. Elliott St., Muncie, Ind.
Joe's—See Snow & Petrelli Mfg. Co.
 Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.
 Snow & Petrelli Mfg. Co., 152 Brewery St., New Haven, Conn. "Joe's."

CLUTCHES, Motorcycle Friction

Eclipse Machine Co., Elmira, N. Y.
 (See page 163.)

CLUTCHES, Tractor Friction

Bierman—See Strite Governor Pulley Co.
 Chicago Machine & Motor Co., 1610-16 Claybourn Ave., Chicago, Ill.
 Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.
 Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn.
Hele-Shaw—See Merchant & Evans Co.
 Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
 Hoosier Clutch Co., 718-34 S. Elliott St., Muncie, Ind.
 Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.
 Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
 M. & E.—See Merchant & Evans Co.
 Medway Sales Corp., Racine, Wis. (Sole Distributor for Toro Motor Co., Minneapolis, Minn. "Stouffer."
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
 Stouffer—See Medway Sales Corp.
 Strite Governor Pulley Co., 307 Third St., S., Minneapolis, Minn. "Bierman."
 Toro Motor Co.—See Medway Sales Corp.
 Twin Disc Clutch Co., Racine, Wis.

COACH LACE—See Lace, Coach

COACH SCREWS—See Screws, Coach

COAT RAIL BAGS—See Bags, Coat Rail

COAT RAILS—See Rails, Robe or Coat

COATINGS, Airplane Wing

(See also Varnish; also Paints, Fireproofing)

American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Hippo."
 Celstrom—See Chemical Products Co.
 Chemical Products Co., 30 Charles River Rd., Cambridge, Mass. "Celstrom."
 Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass.
 Flexible Compound Co., 2607 Haverford Ave., Philadelphia, Pa.
 Hercules Powder Co., 120 Broadway, New York, N. Y.
 Hippo—See American Chemical & Mfg. Co.
 National Aeroplane Co., 549 W. Washington St., Chicago, Ill.
 Nikolas & Co., G. J., 1227-29 W. Van Buren St., Chicago, Ill.
 Phenix Aircraft Products Co., Williamsville, N. Y.
 Titanine, 2 Rector St., New York, N. Y.
 Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
 Valspar—See Valentine & Co.
 Van Schaack Bros. Chemical Works, 3353 Avondale Ave., Chicago, Ill. "Vanita."
 Vanite—See Van Schaack Bros. Chemical Works.

COCK CONTROL RODS FOR FORDS—
 See Rods, Gasoline Cock Control; also
 Wrenches, Oil Cock

COCK WRENCHES FOR FORDS—See
 Wrenches, Oil Cock

COCKS, DRAIN—See Cocks, Spring Key;
 also Cocks, Standard Pet

COCKS, FUEL SUPPLY AND RESERVE—
 See Valves, Two Way Tank

**COCKS, Fuel Supply and Reserve,
 for Fords**

(Two way cock to be attached to gasoline tank to ensure a reserve supply of fuel for emergency)

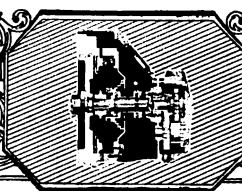
Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Arlington Mfg. Co., Mariners Harbor, N. Y. "Save-A-Walk."
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Save-A-Walk—See Arlington Mfg. Co.
 T-R—See Tolman-Reeve Engineering Corp.
 Tolman-Reeve Engineering Corp., 8104 Michigan Ave., Chicago, Ill. "T-R."
 Stevens & Co., 375 Broadway, New York, N. Y. (See page 201.)

COCKS, GASOLINE—See Cocks, Spring Key; also Cocks, Standard Pet

COCKS, PRIMING—See Cups, Priming

COCKS, RESERVE—See Valves, Two Way Tank

Everything is listed under the NOUN or principal word



The Plate Type Clutch

*is a proven unit—
not an experiment*

∴ ∴ ∴ ∴

Seventy-five per cent
of all automotive man-
ufacturers use the
Plate Type Clutch—
and ninety-five per
cent of all *Plate Type*
Clutches are made by

The
Borg & Beck Company.

General Offices: 920 South Michigan Avenue, Chicago



Please mention The Automobile Trade Directory

COCKS, RESERVE, FOR FORDS—See Cocks, Fuel Supply

COCKS, Spring Key

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
Amalgamated Brass Co., Blanchester, O.
American Brass & Iron Co., Detroit, Mich. (See page 205.)
Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Kant-Leak—See Michigan Lubricator Co.
Lincoln Brass Works, Detroit, Mich. (See page 263.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
Michigan Lubricator Co., Detroit, Mich. (See page 263.)
Powell Co., Wm., 3535 Spring Grove Ave., Cincinnati, O.
Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
Standard Brass Works, 2931 Wight St., Detroit, Mich.

COCKS, Standard Pet

Acorn Brass Mfg. Co., 51 N. Peoria St., Chicago, Ill.
American Brass & Iron Co., Detroit, Mich. (See page 205.)
American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
Belknap Mfg. Co., Bridgeport, Conn.
Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
Britton—See Frasse & Co.
Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
Crane Co., 519 S. Canal St., Chicago, Ill.
Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
Eagle Brass Works, Dubois & Franklin Sts., Detroit, Mich.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Britton." (See page 909.)
Haydenville Co., Haydenville, Mass.
Homer Brass Works, 231 Race St., Philadelphia, Pa.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Jarecki Mfg. Co., Erie, Pa.
Kant-Leak—See Michigan Lubricator Co.
Kelly & Jones Co., Greensburg, Pa.
Lincoln Brass Works, Detroit, Mich. (See page 263.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
McNab & Harlin Mfg. Co., 56 John St., New York, N. Y.
McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
Michigan Lubricator Co., Detroit, Mich. "Kant-Leak." (See page 263.)
Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
Noite Brass Co., Springfield, O.
Powell Co., Wm., 3535 Spring Grove Ave., Cincinnati, O.
Regeater's Sons Co., J., Holliday & Saratoga Sts., Baltimore, Md.
Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
Standard Brass Works, 2931 Wight St., Detroit, Mich.
Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.
Western Brass Mfg. Works, Marshall Blvd. & 31st St., Chicago, Ill. (See page 263.)

COCOA MATS—See Mats, Cocoa

COIL BOX PROTECTORS FOR FORDS— See Protectors, Coil Box

COIL BOXES—See Boxes, Spark Coil

COIL LOCKS FOR FORDS—See Locks, Switch and Coil

COIL PARTS—See Parts, Magneto, Coil and Distributor

COIL SPRINGS—See Springs, Machinery

COIL TESTERS—See Testers, Coil

COIL WINDINGS—See Windings, Starter and Ignition

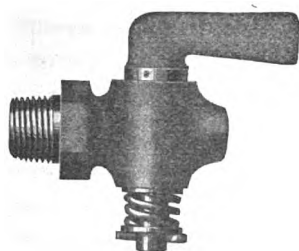
COILS, Motor Boat Spark

Connecticut Telephone & Electric Co., Meriden, Conn.
Detroit Coil Co., 439 Fort St., E., Detroit, Mich.
Lemke Electric Co., 509-13 Cedar St., Milwaukee, Wis.
National Coil Co., 231 N. Cedar St., Lansing, Mich.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

COILS, Motorcycle Spark

Lemke Electric Co., 509-13 Cedar St., Milwaukee, Wis.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

Everything is listed under the NOUN or principal word



"Lincoln" COCKS and PRIMING CUPS

WE SPECIALIZE IN

Gasoline Engine Cocks and
Priming Cups; Radiator Drain
Cocks; Carburetor Pet Cocks.

LINCOLN BRASS WORKS
Detroit Michigan

MICHIGAN LUBRICATOR CO. BRASS PRODUCTS



Kant Leak Cocks will not leak. Made in all standard styles and sizes.



We make a full line of Priming Cups. Model 141C, illustrated, is the most popular model.



This style Drain Cock is used on automobile radiators. Made in $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{3}{8}$ inch thread.



We make all of the styles and sizes of Air Cocks.



We make Brass Elbows, Tees, Couplings, Plugs and Nipples, up to $\frac{1}{4}$ inch.



We also make a complete line of standard S. A. E. Fittings.



This Needle Valve Drain Cock shuts off tight. Largely used on carburetor bowls.



Our Sediment Trap is standard equipment on some thirty leading trucks and tractors.

OUR GENERAL LINE:

Air Cocks
Air Compressor Lubricators
Brass Oilers
Cocks, Brass
Compression Gauge Cocks
Cups, Oil and Grease
Cyclone Lubricators
Drain Cocks
Fittings S.A.E.
Gas Engine Oilers
Gasoline Cocks

BRASS GOODS

MICHIGAN LUBRICATOR CO.

Detroit, Michigan

Capital \$1,000,000.00

Cable Address:
Lubricator, Detroit

3643 BEAUBIEN ST.

Phone:
Melrose 3271

ESTABLISHED 1883

BRASS GOODS

OUR GENERAL LINE Cont

Gauge Cocks
Glass Body Oil Caps
Grease Caps
Kant Leak Cocks
Locomotive Lubricators
Lubricators, Steam
Motor Oilers
Priming Cups—Oil Caps
Radiator Valves
Sediment Traps
Water Gauges

**YES, we are the manufacturers of the
"HUSK" Exhaust Chimes**



Made in two sizes. Polished Brass

"WB" Sprag Levers



Made in two sizes

WESTERN BRASS MANUFACTURING WORKS

STANDARD AND SPECIAL AUTO ACCESSORIES

Marshall Boulevard and 21st St., CHICAGO

Please mention The Automobile Trade Directory

COILS, Spark*(See also Systems, Battery Ignition)*

American Bosch Magneto Corp. (Brightwood),

Springfield, Mass. "Bosch."

American Coil Co., Foxboro, Mass.

Berkshire—See Pittsfield Spark Coil Co.

Bosch—See American Bosch Magneto Corp.

Brown & Caine, 2317-21 Calumet Ave.,

Chicago, Ill. (See page 301.)

Connecticut Telephone & Electric Co., Meriden, Conn.

Famsteel Products Co., North Chicago, Ill. (See page 1025.)

Gray-Heath Co., 1440 S. Michigan Ave.,

Chicago, Ill. "Sturdy." (See page 695.)

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

J & B Mfg. Co., Pittsfield, Mass. (See page 849.)

Jefferson Electric Co., 426-30 S. Green St., Chicago, Ill.

Jewell—See Pittsfield Spark Coil Co.

K-W Ignition Co., 2900 Chester Ave., Cleveland, O.

Kingston—See Kokomo Electric Co.

Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y. "Mesco."

Mesco—See Manhattan Electrical Supply Co.

Micatite—See Pittsfield Spark Coil Co.

Millwood-Bracket Co., 1601 Locust St., Des Moines, Ia. (See page 169.)

National Coil Co., 231 N. Cedar St., Lansing, Mich.

New York Coil Co., 338-40 Pearl St., New York, N. Y.

Pittsfield Spark Coil Co., Pittsfield, Mass. "Jewell," "Berkshire," "Micatite."

Spencer Metal Products Co., Spencer, O. (See page 508.)

Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

Sturdy—See Gray-Heath Co.

Wells Mfg. Co., R. C., 114 S. Brooke St., Fond du Lac, Wis.

Williams, E. Q., 535-39 S. Clinton St., Syracuse, N. Y.

COILS, Spark, for Fords*(See also Vibrators, Master)*

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

COLD CHISELS—See Chisels, Cold and Cape**COLD ROLLED STEEL**—See Steel, Cold Rolled**COLD ROLLED STRIP STEEL**—See Steel, Cold Rolled Strip**COLD SAWS**—See Saws, Cold**COLLAPSIBLE BUCKETS**—See Buckets, Collapsible**COLLAPSIBLE PAILS**—See Buckets, Collapsible**COLLAPSIBLE SPADES**—See Spades and Shovels, Collapsible**COLORS, COACH**—See Paints and Colors**COLUMN BRACES FOR FORDS**—See Braces, Steering Column**COLUMNS, Water and Boiler Alarms**

Reliance Gauge Column Co., 45 E. Prospect St., Cleveland, O.

COMMUTATORS, Electric Motor

Cameron Electrical Mfg. Co., 205 Main St., Ansonia, Conn.

Columbia Machine Works & Malleable Iron Co., Chestnut St. & Atlantic Ave., Brooklyn, N. Y.

Electric Materials Co., North East, Pa.

Eureka Co., North East, Pa.

Homer Commutator Co., 4748 Hough Ave., N. E., Cleveland, O.

Toledo Standard Commutator Co., Toledo, O. (See page 265.)

COMMUTATORS, SPARK—See Timers, Ignition**COMPASSES, Aircraft**

Creagh-Osborne—See Sperry Gyroscope Co.

Pentz, Van Allen & Durkee Compass Co., 4 W. 37th St., New York, N. Y.

Pioneer Instrument Co., 136 Havemeyer St., Brooklyn, N. Y.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y. "Creagh-Osborne."

COMPASSES, Motorists' Pocket*(For carrying when touring)*

Ceebynite—See Taylor Instrument Cos.

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

Taylor Instrument Companies, Rochester, N. Y. "Ceebynite."

COMPENSATING GEARS—See Gears, Differential**COMPOSITION CASTINGS**—See Castings, Bronze and Brass**COMPOSITION CONTROL LEVER BALLS**—See Balls, Composition Control Lever**COMPOSITION GASKETS**—See Packing**COMPOSITION, Insulating***(Substitute for Hard Rubber)*

American Insulator Corp., New Freedom, Pa. (See page 267.)

Bakelite—See Bonton Rubber Mfg. Co.

Bakelite—See Evilo Molding Co.

Bakelite—See General Bakelite Co.

Everything is listed under the NOUN or principal word

THE TOLEDO STANDARD COMMUTATOR CO.

**Reliable One-Piece
Core Commutators
Dependable Deliveries
*Capacity 5,000 per day***

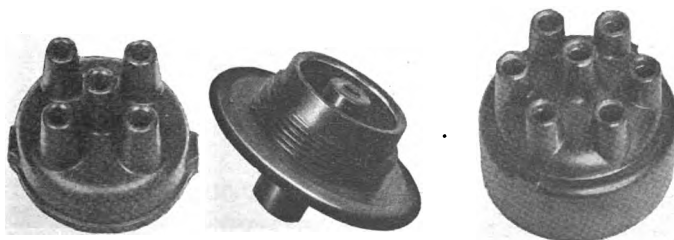
TOLEDO, OHIO, U. S. A.

BAKELITE

[REG. U. S. PAT. OFF.]

Insoluble, infusible, and dielectric, Bakelite has become the foremost insulating material for electrical equipment in the automotive field. Because of its permanent high finish, mechanical strength, its fast color, and excellent weather-resisting qualities, it is rapidly replacing rubber, wood, composition, and other materials in the manufacture of door handles, radiator caps, shift gear balls, and other mechanical parts.

GENERAL BAKELITE COMPANY
TWO RECTOR STREET NEW YORK, N. Y.



Please mention The Automobile Trade Directory

COMPOSITION, Insulating (Continued)

- Bakelite—See Insulation Products Co.
 Bakelite-Dilecto—See Continental Fibre Co.
 Bakelite Micarta—See Westinghouse Electric & Mfg. Co.
 Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 285).
 Boonton Rubber Mfg. Co., 322 Fanny Rd., Boonton, N. J. "Bakelite."
 Condensite—See Duranold Mfg. Co.
 Condensite Co. of America, Grove St., Bloomfield, N. J.
 Continental Fibre Co., Newark, Del. "Bakelite-Dilecto." (See page 267).
 Cutler Hammer Mfg. Co., 390 St. Paul Ave., Milwaukee, Wis. "Thermoplas," "Pyropas."
 Dane Molding Co., 335-41 Sixth Ave., Newark, N. J.
 Dayton Insulating Die Co., Dayton, O.
 Duranold Mfg. Co., 213-21 Chestnut St., Newark, N. J. "Condensite."
 Electroze Mfg. Co., 70 Washington St., Brooklyn, N. Y.
 Evilo Molding Co., Westfield, N. J. "Bakelite."
 Garfield Mfg. Co., Garfield, N. J. "Gummon." "Tegit." "Hemit."
 General Bakelite Co., 2 Reector St., New York, N. Y. "Bakelite." (See page 265).
 General Ignition Products Co., 543 Atlantic Ave., Brooklyn, N. Y.
 General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y. "Hi-Heat." "Redmanol."
 Gummon—See Garfield Mfg. Co.
 Hemit—See Garfield Mfg. Co.
 Hi-Heat—See General Insulate Co.
 Insulation Products Co., Richmond St. & Annon Way, Pittsburgh, Pa. "Bakelite."
 International Insulating Corp., ft. Mechanic St., Springfield, Mass.
 J. P. Bakelite—See Johns-Manville Co.
 Johns-Manville Co., E. W. Madison Ave. & 41st St., New York, N. Y. (Sole Distributors for Johns-Pratt Co., Hartford, Conn. "Noark," "J. P. Bakelite," "Vulcabeston.")
 Johns-Pratt Co.—See Johns-Manville Co.
 Niagara Insul-Bake Specialty Co., 433-93 Delaware Ave., Albany, N. Y.
 Noark—See Johns-Manville Co.
 Redmanol—See General Insulate Co.
 Shaw Insulator Co., 5-7 Kirk Pl., Newark, N. J.
 Specialty Insul. Mfg. Co., Center St. & R.R. Ave., Hoosick Falls, N. Y.
 Tegit—See Garfield Mfg. Co.
 Vulcabeston—See Johns-Manville Co.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. "Bakelite Micarta."
- ## COMPOUNDS, Anti-Freezing
- (See also Alcohol, Denatured)
 Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363).
 Alco-O-Rene—See Hall-Thompson Co.
 Alcoemo Mfg. Co., 120 Bridge St., Newark, N. J. "Alcola." (See page 246).
 Alcola—See Alcoemo Mfg. Co.
 All-In-One—See Scientific Mfg. Co.
 Auto Remedy Co., Evans St., Cincinnati, O. "Magic."
 Benoit, Constant A., Brooklyn, N. Y. "Non-Freeze-Ene." (See page 227).
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Buco—See Burgin & Co.
- Burgin & Co., 487 Broadway, New York, N. Y. "Buco."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361).
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Freeze-Not—See G. & F. Products Co.
 Freeze-Proof—See Johnson & Son.
 Fresalene Mfg. Co., 33-40 E. Clinton St., Chicago, Ill.
 G. & F. Products Co., 1314 12th St., Rock Island, Ill. "Freeze-Not."
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Alco-O-Rene." (See page 226).
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."
 Jewel—See Wadsworth-Howland Co.
 Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Freeze-Proof."
 K-K-K—See Killen Chemical Co.
 Kant Freeze—See Wapakoneta Mfg. Co.
 Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K."
 Liberty Chemical Works, 353 E. Illinois St., Chicago, Ill.
 Magic—See Auto Remedy Co.
 Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Marvin—See Imperial Oil Co.
 Mirrolite Mfg. Co., 208 Eighth St., Long Island City, N. Y.
 Mormlies Co., 416 Sherman St., Chicago, Ill.
 No-Freeze—See Sterns & White Co.
 Non-Freeze-Ene—See Benoit, Constant A.
 Northwestern Chemical Co., 785 State St., Marquette, O. "Norwesco Twelve-Twenty." (See page 277).
 Norwesco Twelve-Twenty—See Northwestern Chemical Co.
 Nulomoline Co., 111 Wall St., New York, N. Y.
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Se-Ro-eZ."
 Peerless—See Columbus Varnish Co.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705).
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. (See pages 125, 143, 307 and 983).
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
 Se-Ro-eZ—See Panvar Co.
 Stearns & White Co., 359 N. Franklin St., Chicago, Ill. "No-Freeze."
 Sterno Corp., New York, N. Y. (See page 228).
 Tankli Chemical Sales Co., 224 High St., Cleveland, O.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Wapakoneta Mfg. Co., Wapakoneta, O. "Kant Freeze."
 Whiz—See Hollingshead Co.
- ## COMPOUNDS, Bearing Grinding
- Kwik-Ak-Shun—See United States Products Co.
 M. T. K. Products Co.—See M. T. K. Sales Corp.

Everything is listed under the NOUN or principal word

BAKELITE



Modern

apparatus requires modern insulation. Bakelite-Dilecto meets the exacting present-day requirements of permanent insulation.

New applications are being continually made.

Our data book may suggest a use in your work.

Write for a copy.

The Continental Fibre Co.
Newark, Delaware

New York Office: 233 Broadway
Pittsburgh Office: 501 Fifth Avenue
Chicago Office: 332 S. Michigan Ave.
San Francisco Office: 525 Market St.
Los Angeles Office: 411 So. Main St.
Canadian Office:
1710 Royal Bank Building
Cor. King & Young Sts.
Toronto, Ont.

DILECTO

MOULDED INSULATION

Radiator Caps



Gear Shifter Handles



Switch Bases



Horn Buttons



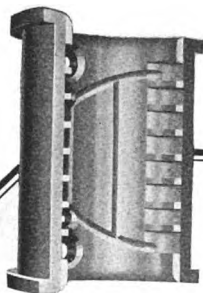
Terminal Insulators



Send Us Your Blueprints and Specifications



American Insulator Corporation
New Freedom, Pa.



Ask Any Engineer

what he wants in a babbitt-lined bearing, and his answer will be, "Standard analysis of my own selection, virgin metals, and the strongest possible bond."

To these requirements American Bearings measure up 100% plus. Your analysis is met with homogeneous alloys from the finest virgin metals. The Olsen Patent Process of casting employs centrifugal force to produce a bond so strong that the bearing can be flattened with a sledge without weakening the bond.

But, most of all, the long life of

AMERICAN BEARINGS

is due to painstaking care and minute knowledge of every element entering into babbitt and bronze.

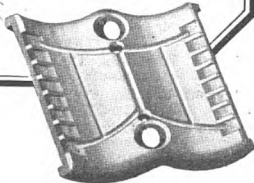
For instance, if the cooling process is just a slight degree too slow, babbitt forms microscopic crystals. It looks all right, it rings all right, but it will not conduct heat. And what use is a bearing that won't conduct heat? This crystalline structure is absolutely eliminated in American Bearings.

It is this exactness in detail which makes American Bearings outlive the motor.

Ask us for more reasons why American Bearings better the motor and cost less to use.



American Bearing &
Die Casting Corp.
Indianapolis, Ind., U.S.A.



Please mention The Automobile Trade Directory

COMPOUNDS, Bearing Grinding (Continued)

M. T. K. Sales Corp., 296 Andrews St., Rochester, N. Y. (Sole Distributors for M. T. K. Products Co., Seattle, Wash. "Timesaver.")
Rennew Products Co., 370 West 51st St., New York. "100 Per Cent."
(See page 269.)
Timesaver—See M. T. K. Sales Corp.
United States Products Co., Pittsburgh, Pa. "Kwik-Ak-Shun." (See page 269.)

COMPOUNDS, BRAKE—See Dressing, Brake

COMPOUNDS, Brazing

A. & J. Mfg. Co., 559 W. Lake St., Chicago, Ill. "Braxiron."
Acome—See Universal Fluxine Co.
Anti-Borax Compounds Co., 1563 Wall St., Fort Wayne, Ind. "Crescent."
Banner—See Cortland Specialty Co.
Braxiron—See A. & J. Mfg. Co.
Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."
Cortland Welding Compound Co., Cortland, N. Y. "Star."
Crescent—See Anti-Borax Compounds Co.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Ever Right—See Fry, Keyser.
Fluxine—See Krambs & Co.
Fry, Keyser, 616-22 N. Eighth St., Reading, Pa. "Ever Right."
Hall-Thompson Co., Dept. A, Hartford, Conn. "Welder Worker."
(See page 229.)
Kast-I-On—See Taber, Arthur L.
Krambs & Co., 178 N. Green St., Chicago, Ill. "Fluxine."
National Rubber & Specialties Co., 4423-25 Chickering Ave., Cincinnati, O. "Red Cross."
P. W. Mfg. Co., Philadelphia, Pa.
Peters, Inc., Widener Bldg., Philadelphia, Pa. "Micro." (See page 269.)
Phillips-Lafitte Co., Pennsylvania Bldg., Philadelphia, Pa.
Red Cross—See National Rubber & Specialties Co.
Rie-Nie—See Durkee-Atwood Co.
Schneider, Emil, 298-306 South St., Newark, N. J.
Standard Bracing Co., 45 Bromfield St., Boston, Mass. "Tichon."
Standard Mfg. Co., 518 S. Canal St., Chicago, Ill. "Superior."
Star—See Cortland Welding Compound Co.
Superior—See Standard Mfg. Co.
Taber, Arthur L., 218 E. Sixth St., Corona, Cal. "Kast-I-On."
Tichon—See Standard Bracing Co.
Transco—See Transmuted Metals Co.
Transmuted Metals Co., 2334 Chicago Ave., Chicago, Ill. "Transco."
Tubular Products Co., 53 Railroad Ave., Southington, Conn.
Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acome."
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Welder Worker—See Hall-Thompson Co.

COMPOUNDS, Buffing and Polishing

Bennett-O'Connell Co., 3600 S. Morgan St., Chicago, Ill. "Mascot," "Excel-All."
Dixon, Wm., 89 John St., New York, N. Y.
Excel-All—See Bennett-O'Connell Co.
Mascot—See Bennett-O'Connell Co.
Munning & Co., A. P., Matawan, N. J.
Stevens, Frederic B., Third & Larned Sts., Detroit, Mich. "White Rose," "White Columbia."
White Columbia—See Stevens, Frederic B.
White Rose—See Stevens, Frederic B.

COMPOUNDS, Carbon Removing

(See also Removers, Carbon; also Machines, Motor Decarbonizing; also Moisteners, Air or Moisture)
Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
(See page 363.)
Ad-el-ite—See Adams & Elting Co.
Aksala—See Killen Chemical Co.
All-In-One—See Scientific Mfg. Co.
American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.
Auto Products Mfg. Co., Buffalo, N. Y. "Kleen-R-Plug."
Ball Carbon Remover Co., 3416 Baring St., Indianapolis, Ind.
Ball Products Co., 236 Fifth St., Detroit, Mich.
Be-Be-Co.—See Boston Blacking Co.
Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
Ben-Wat Corp., Jamesburg, N. J.
Benoit, Constant A., Brooklyn, N. Y. "Fermax Carbo-Klean."
(See page 227.)
Black Diamond—See Hanley & Howitz.
Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
Blozout—See Wallace Mfg. Co.
Blue Ribbon—See International Metal Polish Co.
Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
Buffalo Specialty Co., Buffalo, N. Y. "Never-Knock." (See page 227.)
Burnox Co., 6224 Greenfield Ave. (W. Allis), Milwaukee, Wis.
"C-P" Chemical Co., 326 River St., Chicago, Ill. "Carbon-X."
Car-Bo-Deen Mfg. Co., 929 Chestnut St., St. Louis, Mo.
Carbocide—See Van Cleef Bros.
Carbolax—See Lindsay, McMillan Co.
Carbolide Chemical Co., Monrovia, Md.
Carbon-X—See "C-P" Chemical Co.
Carbon Cleaning Compound Co., 901 N. Euclid Ave., St. Louis, Mo. "Four Seas."
Carbonox—See Northwestern Chemical Co.
Carbonsolve—See Rust-Off Mfg. Co.
Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."
Chemical Specialties Co., 227 S. W. Blvd., Kansas City, Mo. "Wallins."
Columbus Varnish Co., Columbus, O. "Peerless." (See page 301.)
Cook Geo. E., 360 Amsterdam Ave., New York, N. Y.
Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.

Everything is listed under the NOUN or principal word

(PATENTED)

KWIK-AK-SHUN

(PATENTED)

—for 100% Bearings
in 75% less time

Garages, repair shops and automobile plants have unskilled mechanics turning out 100% bearings in one-quarter of the time it used to take experts to "scrape" 45% to 50% bearings.

Kwik-Ak-Shun enables them to successfully apply the lapping process to babbit, brass, bronze, etc. Positively will not cut steel or iron. Does its work; "breaks down" and is then inoperative—no emery, glass or carborundum to stick and injure any part of the machinery.

Single cans (8 ounces net weight).....\$1.00

6-can cartons (18 ounces net weight)..... 9.00

12-can cartons (36 ounces net weight).....13.00

For Sale by all Recognized Jobbers, or write to

**United States Products
Company**

SOLE MANUFACTURERS

Pittsburgh

Pennsylvania



BEARING

GRINDING COMPOUND

Saves 50% of the usual time consumed in scraping babbit and bronze bearings and produces a far superior and more durable bearing surface.

"100%" is used and endorsed by many of the leading motor builders and prominent service organizations in the country.

"100%" is made in two grades, "fine" for finishing babbit, and "coarse" for hard grades of babbit also bronze bearings, wrist pin bushings, etc.

LIST PRICE

Single cans net weight 8 oz. each.....\$1.00

Packed in 6-can cartons, 24 cartons in wooden case

DISCOUNTS TO THE TRADE

If not stocked by your jobber write us direct, giving jobber's name.

RENEW PRODUCTS COMPANY

370 West 51st Street

New York City

PETERS
TRADE MARK

PRODUCTS

TIME AND LABOR SAVING EQUIPMENT

UNIVERSAL BEARING REAMER.....\$300.00

A combination boring and babbiting tool for main and connecting rod bearings.

Reams all bearings to size and alignment with one setting.

Can be operated in all standard types of four, six, eight, and twelve cylinder motors.

Full universal adjustment that can be set standard for any one type of motor.

CRANKSHAFT GRINDER.....\$75.00

A hand tool producing results that surpass an expensive power driven machine.

ONE quick and simple adjustment.

Can be operated without dismantling the motor.

Will true a shaft in one-fifth the time ordinarily required.

Self-contained, requiring no replacements.

CYLINDER SURFACE PLANNER.....\$6.00

For finishing off the excess Metallic Filler from a scored cylinder repair, in perfect cylindrical alignment.

Cannot scar the cylinder wall.

Instantly adjustable to all sizes of cylinders.

METALLIC FILLER.....per pound \$5.50

For the repair of scored cylinders, cracked water jackets and other imperfections in iron, steel, brass and bronze castings.

Working at 300° makes a wear-resisting repair which will sustain a pressure of 75 to 100 pounds per square inch.

ALUMINUM BRAZING COMPOUND.....per pound \$3.50

Guaranteed non-corrosive—resisting chemical action of oil.

Working at 500° makes a stronger repair than any known method of aluminum welding or soldering and without risk of warping or distortion.

Widener Building

PETERS, INCORPORATED

Philadelphia, Pa.

Please mention The Automobile Trade Directory

COMPOUNDS, Carbon Removing (Continued)

- Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylogon."
- Denegre Baked Enamel Remover Co., 1922-24 Ave. F, Birmingham, Ala.
- Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich.
- Diamond—See Nu-Back Mfg. Co.
- Durkee-Atwood Co., 49 Wilder St., Minneapolis, Minn. "Rie-Nie."
- Elgin Motor Power Mfg. Co., 418 Third Ave., Cedar Rapids, Iowa. "Torpedo."
- Evans Mfg. Co., 630-33 E. 63d St., Chicago, Ill.
- Expello—See Tecaness Products Co.
- Famco—See Mears Chemical Co.
- Fearless Sales Co., 307 14th St., Denver, Colo.
- Fiebing Chemical Co., 222-40 Reed St., Milwaukee, Wis. "Victor."
- Four Sees—See Carbon Cleaning Compound Co.
- Franklin Distributing Co., 148 Elmwood Ave., Buffalo, N. Y.
- French Compression Fluids Co., Pasadena, Cal.
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Magic." "Wonder Worker." (See page 229.)
- Hanley & Howitz, 1525 W. Indiana Ave. (No. Phila.), Philadelphia, Pa. "Black Diamond."
- Hart-Bell Co., 1926 Broadway, New York, N. Y.
- Hollingshead Co., A. M., 112 N. Ninth St., Camden, N. J. "Whiz."
- Instant Products Co., 21 Cambria St., Boston, Mass.
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Interstate Mfg. Co., Wollaston, Mass. "M. H. B."
- Jewel—See Wadsworth-Howland Co.
- Johnson & Son, S. C., 1613 16th St., Racine, Wis.
- Karbon Killer—See Ohio Grease Co.
- Karbon Klean Co., 227 S. Front St., Philadelphia, Pa.
- Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "Aksala."
- Kimo Mfg. Co., 2665 Main St., Buffalo, N. Y.
- Kleen-R-Plug—See Auto Products Mfg. Co.
- Koppax—See Koppers Products Co.
- Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "Koppax."
- Kosmas-Art Co., 120 E. Sixth St., Cincinnati, O. "Lightning."
- Kwik-Ak-Shun—See United States Products Co.
- Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
- Lightning—See Kosmas-Art Co.
- Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Carbolax."
- M. H. B.—See Interstate Mfg. Co.
- McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
- Magic—See Hall-Thompson Co.
- Mansfield Mfg. Corp., 822 S. Clinton St., Syracuse, N. Y.
- Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
- Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."
- Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radiata."
- Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
- Monox—See Monoxide Co. of America.
- Monoxide Co. of America, 1367 Gratiot Ave., Detroit, Mich. "Monox."
- Motor Klean Co., 647 Third Ave., New York, N. Y.
- Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wunder."
- Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- Never-Knock—See Buffalo Specialty Co.
- Nobrac Co., 1777 Broadway, New York, N. Y.
- Northwestern Chemical Co., 785 State St., Marietta, O. "Carbenex." (See page 277.)
- Nu-Back Mfg. Co., 218-15 S. Second St., St. Louis, Mo. "Diamond."
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- Ohio Grease Co., Box 21, Loudonville, O. "Karbon-Killer." (See page 271.)
- Opcos—See World Oil Products Co.
- Organic Products Corp., 301 Liberty St., Schenectady, N. Y.
- Orient Chemical Co., Gumbel Bldg., Kansas City, Mo.
- Peerless—See Columbus Varnish Co.
- Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
- Permatex Carbo-Klean—See Benoit, Constant A.
- Phenoid—See Chalmers Chemical Co.
- Price, Roy D., Wagoner, Ill. "R-D-P."
- Pruden Chemical Co., 2401 W. Washington Blvd., Chicago, Ill.
- Quickwork—See Standard Varnish Works.
- R-D-F—See Price, Roy D.
- Radium—See Milwaukee Auto Specialty Co.
- Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
- Red Line, Inc., Grand Rapids, Mich. (See page 667.)
- Rie-Nie—See Durkee-Atwood Co.
- Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Carbonsolve."
- Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
- Seal-Fast—See Bowes Co.
- Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
- Sterno Corp., New York, N. Y. (See page 229.)
- "Sure Shot" Carbon Remover Co., 643 N. 29th St., Louisville, Ky.
- Tecaness Products Co., Nyack, N. Y. "Expello."
- Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
- Torpedo—See Elgin Motor Power Mfg. Co.
- Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twince."
- Twince—See Twin City Varnish Co.
- United States Products Co., Pittsburgh, Pa. "Kwik-Ak-Shun." (See page 269.)
- Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Carbocide."
- Victor—See Fiebing Chemical Co.
- Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
- Wallace Mfg. Co., 239 Halsey St., Newark, N. J. "Blozout."
- Wallins—See Chemical Specialties Co.
- Whiz—See Hollingshead Co.
- Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
- Wonder Worker—See Hall-Thompson Co.
- Worko Co., Sattley Bldg., Racine, Wis.
- World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Opcos."

Everything is listed under the NOUN or principal word



FOR MOTOR CARS

Closed Body:

Upholstery Cloths
Carpets
Curtain Silks
Trimmings
Slip-Cover Cloths

Open Body:

Top Materials
Curtain Materials
Leather Cloths
Slip-Cover Cloths
Hair Carpet

A LARGE, WELL ASSORTED STOCK, WITH A MATERIAL FOR EVERY NEED

Samples Sent Upon Request

MIDLAND FABRICS CO. Inc.
228 W. 58th St., New York, N. Y.



Ohio Karbon Killer is, without doubt, the surest, purest, and most efficient carbon remedy in existence.

Ohio Karbon Killer eliminates old carbon deposits; cleans the engine thoroughly; and effectually puts an end to knocking, missing, back firing, loss of compression, etc.

Ohio Karbon Killer is mixed with the gasoline; is on the job every minute; and prevents the formation of carbon on the spark plugs, cylinder walls, piston and valves.

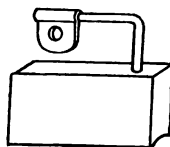
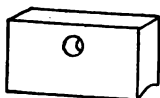
Ohio Karbon Killer increases speed, power and mileage; produces more uniform combustion; reduces gasoline and repair bills; and makes the car run smoother, easier and quieter.

Ohio Karbon Killer comes in condensed form, and is used at the rate of one level teaspoonful to five gallons of gasoline. One pound will treat 480 gallons, and costs \$1.00—about one-fifth of a cent per gallon. Liberal discounts to dealers. Write for prices, etc.

THE OHIO GREASE COMPANY
P. O. Box 21
Loudonville, Ohio

CARBALLOY AUTOMOBILE BRUSHES

the
Brush of Quality
for
Starter or Generator



The correct brush **BY TEST** for any starting and lighting system. Make sure your distributor furnishes you with **CARBALLOY BRUSHES**.

THE CARBALLOY PRODUCTS COMPANY

Manufacturing Engineers
BELLEVUE, OHIO

Longstreth & VanDyke.....	1613 Chestnut St., Philadelphia, Pa.
A. C. Austin.....	6 Beacon St., Boston, Mass.
F. E. Beecher.....	1835 Republic Bldg., Chicago, Ill.
Sindel & Shafranek.....	754 Hippodrome Annex, Cleveland, O.
H. E. Prior.....	1012 N. Illinois St., Indianapolis, Ind.
LeFile & Houston Co.....	285 Hill Bldg., Jacksonville, Fla.
E. F. Ward.....	605 Van Nuys Bldg., Los Angeles, Cal.

Please mention The Automobile Trade Directory

COMPOUNDS, Carbon Removing (Continued)

Wunder—See Munger Products Co.
Xylogon—See Dealers Motor Supply Corp.
Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill.

COMPOUNDS, Case Hardening

Achilles—See Houghton & Co.
Atlas—See European Color & Chemical Co.
B-G—See Bell & Gossett Co.
Bell & Gossett Co., 609 W. 30th St., Chicago, Ill. "B-G."
Black Diamond—See Rogers & Hubbard Co.
Blaiseh Co., Alfred O., 1956 Clybourn Ave., Chicago, Ill. (See page 273.)
Bohnite—See Case Hardening Service Co.
Buchanan Chemical Co., C. G., Baker Ave., Cincinnati, O. "Ferro-Case."
Buchanan Co., Thos., 29 W. Third St., Cincinnati, O. "Hardo."
Bull—See Rodman Chemical Co.
Carbo—See Rodman Chemical Co.
Carbonit—See Springfield Facing Co.
Case Hardening Service Co., 2279 Scranton Rd., Cleveland, O. "Bohnite." (See page 273.)
Deeds Commercial Laboratories, 2150 Montcalm St., Indianapolis, Ind. "Grit."
Excelsior—See European Color Chemical Co.
European Color & Chemical Co., 18th St. & Park Ave., Weehawken, N. J.
"Atlas," "Excelsior."
Ferro Case—See Buchanan Chemical Co.
Grit—See Deeds Commercial Laboratories.
Hafeligh & Co., Cambria & American Sts., Philadelphia, Pa.
Hardo—See Buchanan Co.
Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Achilles," "Pearlite."
Ideal Case-Hardening Compound Co., 107 Water St., New York, N. Y.
Kalux—See Metal Hardening Solution Co.
Keystone—See Rodman Chemical Co.
Metal Hardening Solution Co., 13 Banker Pl., Rochester, N. Y. "Kalux."
Montgomery Chemical Works, Elmtree & Doremus Sts., Detroit, Mich.
Morris & Co., U. S. Yards, Chicago, Ill.
Mosso Laboratories, C. A., 2253 Warren Ave., Chicago, Ill.
Park Chemical Co., Detroit, Mich. "Wood-sides." (See page 273.)
Pearlite—See Houghton & Co.
Pettinos, Charles E., 25 Church St., New York, N. Y.
R & H—See Roessler & Hasslacher Chemical Co.
Rodman Chemical Co., Verona, Pa. "Carbo," "Keystone," "Bull."
Roessler & Hasslacher Chemical Co., 100 William St., New York, N. Y. "R & H."
Rogers & Hubbard Co., Middletown, Conn. "Black Diamond."
Springfield Facing Co., 217 Main St., Springfield, Mass. "Carbonit."
Steco—See Steel Treating Equipment Co.
Steel Treating Equipment Co., 7939-39 Lafayette Blvd., W., Detroit, Mich. "Steco."
Woodslides—See Park Chemical Co.

COMPOUNDS, Chemical Plating

(See also *Polluxes, Metal; also Enamels, Brass*)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
Atlas Auto Supply Co., 627 W. Austin Ave., Chicago, Ill. "Silver Quick." (See page 229.)
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Eastern Rubber Co., Penna. Ave. & Brown St., Philadelphia, Pa. "Magic."
Forest City Sales Co., Fremont, Neb. "Quick Knick."
Justice Co., A. R., 617 Chestnut St., Philadelphia, Pa. "U-Kan-Plate."
Magic—See Eastern Rubber Co.
Naspel—See National Silver Plating Laboratories.
National Silver Plating Laboratories, 410 Lafayette St., New York, N. Y. "Naspel."
Quick Knick—See Forest City Sales Co.
Rie-Nie—See Durkee-Atwood Co.
Silver Quick—See Atlas Auto Supply Co.
Silkup—See Arnold, N. B.
U-Kan-Plate—See Justice Co.

COMPOUNDS, Core

Ebony—See Hill & Griffith Co.
Glutrin—See Robeson Process Co.
Hill & Griffith Co., C. H. & D. Ry. & Gast St., Cincinnati, O. "Ebony," "Linoline."
King Kore Kompond—See Stevens, Frederic B.
Linoline—See Hill & Griffith Co.
McCormick Co., J. S., 2423-24 Railroad St., Pittsburgh, Pa.
Mills Mfg. Co., H. B., 243 Walton St., Syracuse, N. Y.
Obermayer Co., S., 647 Evans St., Cincinnati, O.
Robeson Process Co., 15 E. 41st St., New York, N. Y. "Glutrin."
Stevens, Frederic B., Third & Larned Sts., Detroit, Mich. "King Kore Kompond."
Swan & Finch Co., 165 Broadway, New York, N. Y.

COMPOUNDS, Gasoline Treating

Aksala—See Killen Kemical Ko.
Alverd Sales Co., 80 Terrace, Buffalo, N. Y.
American Sales Co., Haverhill, Mass. "Kar-Bon-Ex."
Auto Remedy Co., Evans St., Cincinnati, O. "Magic."
Boggs Co., Kirk A., Fort Dodge, Iowa. "Gas-O-Life."
Bush Chemical Co., St. Louis, Mo.
Car-Bon-Ale Co., Lincoln, Neb.
Carbo-Line Co., Hastings, Neb.
Carbonvoid—See Lloyd's of America.
Chemical Reduction Co., 88 Broad St., Boston, Mass. "Pap-O."
Conservation Products Co., 719 Garfield Ave., Pasadena, Cal. "Energie-Decarbo."
Culco—See Culmer Chemical Co.
Culmer Chemical Co., Independence, Kans. "Culco."
Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylogon."
Desmond Mfg. Co., E. G., 346 Atlantic Ave., Brooklyn, N. Y. "Miracle."
Eccolens Co., Detroit, Mich.

Everything is listed under the NOUN or principal word

EVERYTHING FOR A STEEL TREATING PLANT

WOODSIDE'S RAPID CARBONIZERS
(For Pack Hardening.)

CYANIDE HARDENING COMPOUND
(For Cyanide Hardening.)

CLEAN HEAT
(A Soaking Medium to eliminate scale or soft spots.)

PARK QUENCHING & DRAWING OILS
(For Tempering Purposes.)

LEAD POT CARBON
(To replace Charcoal for covering lead pots or molten non-ferrous metals.)

HIGH TEMPERATURE ORMENTS
(For increasing life of Forge and Heat Treatment Furnaces.)

METALLURGICAL EQUIPMENT
(For Equipping Metallurgical Laboratories.)

We are manufacturers and can offer best prices and service.

PARK CHEMICAL COMPANY, DETROIT MICH.



AUTOMOBILE ACCESSORIES

**Shop Equipment
and Tools**
(Wholesale Only)

**THE
BECKLEY-RALSTON
COMPANY**

Michigan Boul. & 18th St.
CHICAGO

Why Use Bohnite?

Because there is no Better
CASE HARDENING COMPOUND

*If YOU need more reasons
Write*

The Case Hardening Service Co.
2279 Scranton Road, Cleveland, Ohio

Case Hardening Materials

ALL THE LEADING AUTOMOBILE AND AUTO PARTS MANUFACTURERS HAVE ADOPTED

"Blair Modern Carbonizer"

LICENSEE UNDER RODMAN PATENTS

ALFRED O. BLAIR CO., 1956 Clybourn Ave., CHICAGO, ILL.

Please mention The Automobile Trade Directory

COMPOUNDS, Gasoline Treating (Continued)

Econ-O-Kleen Fuel Co., 105 Labree Ave., Thief River Falls, Minn.
 Energie-Decarbo—See Conservation Products Co.
 Farley & MacNeill, 105-07 Federal St., Boston, Mass. (Sole Distributors for Greenleaf Products Co., Boston, Mass. "O-Co.")
 Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash. "Hi-Life."
 Fueline Co., 188 Market St., Newark, N. J.
 Gas-Aid—See Hy-Klas Auto Products Co.
 Gas-Zip—See Sealer Distributing Co.
 Gas-O-Life—See Boggs Co.
 Gaso-Tonic Co., 19 E. Second St., Cincinnati, O.
 Gastine Co., Bridgeton, N. J.
 Go Gas, 42d St. & Lexington Ave., New York, N. Y.
 Greenleaf Products Co.—See Farley & MacNeill.
 Hi-Life—See Fry Mfg. Co.
 Hy-Klas Auto Products Co., Jackson, Mich. "Gas-Aid."
 Inajiffi Mfg. Co., Walsh Bldg., Akron, O.
 Inter-Lube Chemical Co., Lennox Bldg., Cleveland, O.
 Kar-Bon-Ex—See American Sales Co.
 Karbonoid Chemical Co., 318 East Ave., Elyria, O.
 King, L. Gerald, 21 Pine St., Deposit, N. Y.
 Lewis Tool Co., 612 Fifth Ave. S., Minneapolis, Minn. (Sole Distributors for Oxygen Products Co., Thief River Falls, Minn. "Oxo.")
 Lloyd's of America, Bradley Beach, N. J. "Carbonvoid."
 Lot-A-Pep—See Panvar Co.
 Lowe Mfg. Co., J. H., Seneca Falls, N. Y.
 Magio—See Auto Remedy Co.
 Meroder, Paul, 907 John St., Utica, N. Y.
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y. "Oxigene."
 Miracle—See Desmond Mfg. Co.
 Miracle Mfg. Co., Toledo Factories Bldg., Toledo, O.
 Mergo Oil Co., White Bldg., Buffalo, N. Y.
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 Moto Whiz—See Ray Mfg. Co.
 Motorcool Oil Co., 20 E. Jackson Blvd., Chicago, Ill. (See page 1001.)
 Motor-Pep—See Utilities Co.
 Motor Run Oil Co., 9 E. 15th St., Brooklyn, N. Y.
 Motorlife Mfg. Co., 955-57 Poplar Ave., Memphis, Tenn.
 Nitol Motor Products Co., 68 Orchard St., Newark, N. J.
 Nitro—See Nitroline Products Co.
 Nitroline Products Co., 1763 Broadway, New York, N. Y. "Nitro."
 O-Co.—See Farley & MacNeill.
 Oxigene—See Miller Co.
 Oxo—See Lewis Tool Co.
 Oxygen Products Co., Thief River Falls, Minn. "Oxo."
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Lot-A-Pep."
 Pep-O—See Chemical Reduction Co.
 Permatite Mfg. Co., 31 Fifth St., N. E., Minneapolis, Minn.
 Power Gas Products Co., 2921 Stevens Ave., Minneapolis, Minn.
 Ray Mfg. Co., 1327 Columbia Ave., Philadelphia, Pa. "Moto Whiz."

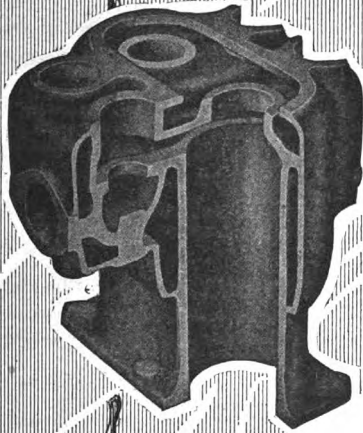
Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo. "Speedo."
 Sales Service Co., 13 Water St., New York N. Y.
 Sealer Distributing Co., 80 E. Jackson St., Chicago, Ill. "Gas-Zip."
 Speedo—See Red Devil Mfg. Co.
 Speedolene Co., Dallas, Texas.
 Tankil Chemical Sales Co., 224 High St., Cleveland, O.
 Utilities Co., Citizens Bldg., Cleveland, O. "Motor-Pep."
 Wizard Products Co., Buffalo, N. Y.
 Xylogon—See Dealers Motor Supply Corp.

COMPOUNDS, Glass Windshield

(For keeping glass clear in rain or fog; for chemical cleaners—See Cleaners, Glass Windshield)

Alder Chemical Co., 135 Washington St., Mt. Vernon, N. Y. "Star Clean."
 All-In-One—See Scientific Mfg. Co.
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Clearite."
 Ben-Wat Corp., Jamesburg, N. J.
 Blue Ribbon—See International Metal Polish Co.
 C-Clear—See Neu Metal Products Corp.
 C-Clear—See Sole Mfg. Co.
 Clearite—See Bear Cat Products Co.
 Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa. "Seerite."
 Clear-Site—See Wa-Po Products Co.
 Clear Vision—See Safety Storage Co.
 Clear Vision—See Racine Accessories Mfg. Co.
 Cleroline Chemical Co., 503 Fifth Ave., New York, N. Y.
 Cleveland Presto-Cloth Co., 1401 E. 93d St., Cleveland, O.
 Conservation Products Co., 221 W. Fifth St., Los Angeles, Cal. "Security."
 Cook, J. J., 403 Grand Ave., Milwaukee, Wis.
 Crystal-On Chemical Co., Charleston, S. C.
 Davis Chemical Mfg. Co., 306 Warren Ave., Brockton, Mass. "Frakto-Kloth."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Evva-Klear Specialty Co., 186 Remsen St., Brooklyn, N. Y.
 Fog-O-Lite—See National Chemical Co.
 Forbes Co., Benjamin P., 409 Superior Ave., N. W., Cleveland, O. "Glasbrite."
 Frakto-Kloth—See Davis Chemical Mfg. Co.
 Gastine Co., Bridgeton, N. J.
 General Mfg. Co., 240 Fifth St., San Francisco, Cal. "Klear-Glas."
 Glasbrite—See Forbes Co.
 Greb Co., 195 State St., Boston, Mass. (See page 747.)
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
 Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Klear-Glas—See General Mfg. Co.
 Miracle Mfg. Co., Toledo Factories Bldg., Toledo, O.
 Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y. "See Clear."
 Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Sturm Wrag."

Everything is listed under the NOUN or principal word



Quality Castings



If you would visit our wonderfully equipped plant at Waterbury and see how our castings are made, you would understand our reasons for calling them "quality castings."

Everything that can assure a finished product, free from flaws of construction or errors of design, is carried out in our foundry. We are specialists in the manufacture of castings. Our formulæ are based on actual experience. We have increased our capacity to meet the growing demand for our superior castings. Our experience in this line guarantees you a perfect product.

**MANUFACTURERS
FOUNDRY CO.
WATERBURY, CONN.**

Please mention The Automobile Trade Directory

COMPOUNDS, Glass Windshield (Continued)

National Chemical Co., Canal Fulton, O. "Fog-O-Lite."
 New Metal Products Corp., Whipple Bldg., Binghamton, N. Y. "C-Clear."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Clear Vision." (See page 701.)
 Rain-a-Way—See Badger Mfg. Corp.
 Rainy Racer Co., 3-5 E. Redwood St., Baltimore, Md.
 Rio-Nie—See Durkee-Atwood Co.
 Safety Storage Co., 700 Central Ave., Minneapolis, Minn. "Clear Vision."
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
 Security—See Conversation Products Co.
 See Clear—See Mirrorlike Mfg. Co.
 Seerite—See Clamert Mfg. Co.
 Sole Mfg. Co., 148 Chambers St., New York, N. Y. "C-Clear."
 Star Clean—See Alder Chemical Co.
 Sturm Wrag—See Mosher, J. H.
 Usaco—See Unique Auto Specialties Co.
 Unique Auto Specialties Co., 230 Golden Gate Ave., San Francisco, Cal. "Usaco."
 Wa-Po Products Co., 111 W. South Water St., Chicago, Ill. "Clear-Site."
 Whis—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

COMPOUNDS, GRINDING — See Compounds, Valve Grinding; also Compounds, Bearing Grinding

COMPOUNDS, HARDENING—See Compounds, Case Hardening

COMPOUNDS, LUMINOUS—See Paints, Luminous

COMPOUNDS, PHOSPHORESCENT — See Paints, Luminous

COMPOUNDS, PLATING — See Compounds, Chemical Plating

COMPOUNDS, POLISHING — See Compounds, Buffing and Polishing

COMPOUNDS, Puncture Sealing

(For use in pneumatic tires for automatically sealing small leaks resulting from punctures)

Alcoemo Mfg. Co., 120 Bridge St., Newark, N. J. "Kor-Ker." (See page 249.)
 American Automotive Accessory Co., 317 Van Ness Ave., San Francisco, Cal.
 Auto Necessities Co., Austin, Minn.
 Blau, Jacob B., 623 N. Connecticut Ave., Atlantic City, N. J.
 Blu-Devil—See Swan Mfg. Co.
 Cat-Nak Co., 1681 N. Wells St., Chicago, Ill.
 Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Tyre Lyte."
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Puncture-Seal."
 Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.
 Gee-Bee—See Green Bay Supply Co.
 Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Innerseal—See Syndicate Sales Co.
 Kor-Ker—See Alcoemo Mfg. Co.
 Nu-Way Puncture Cure Co., 224 Pine St., Green Bay, Wis.
 Plugit Co., Florence, S. C.
 Puncture-Seal—See Dealers Motor Supply Corp.
 Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa. "Rayseal."
 Rayseal—See Ray Mfg. Co.
 Relax Co., 2113 Monroe Ave., Norwood, O.
 Swan Mfg. Co., Lima, O. "Blu-Devil."
 Syndicate Sales Co., Syndicate Trust Bldg., St. Louis, Mo. "Innerseal."
 Tubo Mfg. Co., 610 N. Vandeventer Ave., St. Louis, Mo.
 Tyre Lyte—See Dannenhirsch Co.
 Whis—See Hollingshead Co.

COMPOUNDS, Radiator Cleaning

(For Radiator Cement—See Cement, Radiator)

Adams & Eiting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)
 Ad-el-ite—See Adams & Eiting Co.
 All-In-One—See Scientific Mfg. Co.
 Corol Co., 127 N. Dearborn St., Chicago, Ill.
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rio-Nie."
 Dutch—See Van Cleef Bros.
 Elder Mfg. Co., 2305 N. Illinois St., Indianapolis, Ind. "Radio."
 Field Auto Compound Mfg. Co., Auburn, Mo.
 Fluff-Foe—See Garratt-Callahan Co.
 Fresalene Mfg. Co., 32-40 S. Clinton St., Chicago, Ill.
 Garratt-Callahan Co., 37 S. Clinton St., Chicago, Ill. "Fluff-Foe."
 Gee-Bee—See Green Bay Supply Co.
 Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Karbonoid Chemical Co., 318 East Ave., Myria, O. "No-Rust-O."
 No-Rusto-O—See Karbonoid Chemical Co.
 Northwestern Chemical Co., 755 State St., Marietta, O. "Skalex." (See page 277.)
 Opco—See World Oil Products Co.
 Perma-Lee Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Radio—See Elder Mfg. Co.
 Rio-Nie—See Durkee-Atwood Co.
 Scientific Mfg. Co., 426 Prospect Ave., Scranton, Pa. "All-In-One."
 Skalex—See Northwestern Chemical Co.
 Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
 Tubo Mfg. Co., 611 N. Vandeventer Ave., St. Louis, Mo.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Velvet—See Sutherland & Co.
 Whis—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.
 World Oil Products Co., 1436 Seneca St., Buffalo, N. Y. "Opco."
 Young & McBride, Catsaugus, Pa.

Everything is listed under the NOUN or principal word



Se-Ment-Ol
(Liquid or Powder)

A radiator repairer that finds leaks readily and fixes them permanently. One five can will repair the largest cooling system. Prices: Last price per can, 75c. Packed 15 in cartons, \$9.00; dealer's net price, \$8.40 per carton.



Mohair Top Dressing and Lining Dye

Penetrates and waterproofs the fabric. Prices, pint, 45c. Carton of 12, list price, \$10.50; dealer's net price, \$9.60 per carton. Quart, \$1.50. Carton of 12, list price, \$15.00; dealer's net price, \$11.70 per carton.



Valve Grinding Compound

In famous three-and-one can—3 in. square, 1 in. dia. Free from ground glass or emery. Price per can, 45c. Carton of 12—list price, \$5.40; dealer's net price, \$5.00 per carton. One lb. can, 75c. Carton of 12—list price, \$11.50; dealer's net price, \$10.50 per carton.

WANTED!

There are few products on the market as much in demand as the standard NORWESCO line of "chemically correct" utilities. Stocking one universally accepted line, and eliminating slower selling makes, means less money tied up in stock, bigger profit on a smaller investment and a quicker turnover.

You make no mistake in choosing NORWESCO products—they give you and your trade most value for the money. Get acquainted with them *today!*

Ask Your Jobber or Write to Us for Full Particulars

There's a NORWESCO product for every need

Se-Ment-Ol Radiator Cement
(Liquid or Powder)

Carbonox Carbon Remover.
Never-Burn Engine Enamel.
Tire Lac Tire Paint.

Norwesco Rim and Gasket Shellac.

Norwesco Neatsfoot Clutch and Brake Compound.

Norwesco Automobile and Furniture Polish.

Norwesco Color Varnishes.

Norwesco Mechanic's Blue.

Norwesco Soldering Paste.

Norwesco Pumice Hand Soap.

Norwesco Rim Graphite Coating.

Norwesco Iron Cement.

Norwesco Soldering Salt.

NORWESCO Khaki Top Dressing and Lining Dye.

**THE NORTHWESTERN
CHEMICAL CO.**

785 State Street
Marietta, Ohio

Canadian Factory:
Toronto



Utility Black

An air-drying enamel for metal parts. Half pint, 60c. Carton of 12, list price, \$7.50; dealer's net price, \$6.80 per carton. Price, pint, \$1.00. Carton of 12, list price, \$12.00; dealer's net price, \$11.10. Carton of 12, list price, \$21.00; dealer's net price, \$19.00 per carton.



Leather Fantasee Top and Upholstery Dressing

Waterproofs and preserves. Price, pint, 85c. Carton of 12, list price, \$10.50; dealer's net price, \$9.60 per carton. Quart, \$1.50. Carton of 12, list price, \$15.00; dealer's net price, \$11.70 per carton.



Skalex

Removes all lime, rust and sediment. Prevents overheating—cannot injure the radiator. Price, per 14 in. can, 75c. Packed 15 in cartons—list price, \$9.00; dealer's net price, \$8.40 per carton.

Please mention The Automobile Trade Directory

COMPOUNDS, RADIATOR SEALING — See Cement, Radiator Repair

COMPOUNDS, Rust Preventing and Removing

American Chemical Paint Co., 273 E. Jefferson St., Detroit, Mich. "Deoxidine." (See page 279.)
American Rust Proof Co., 8 W. 40th St., New York, N. Y. "Vatudrip."
Benoit, Constant A., Brooklyn, N. Y. "Permatex Solvo-Rust." (See page 227.)
Berry Bros., 211 Lieb St., Detroit, Mich. "Raven."
Bradford Oil Co., 152 Pleasant St., Lynn, Mass. "Cedaroleum."
Cedaroleum—See Bradford Oil Co.
Conversion Products Corp., 149 Broadway, New York, N. Y. "Stazon."
Corol Co., 127 N. Dearborn St., Chicago, Ill.
Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill. "No-Ox-Id."
Deoxidine—See American Chemical Paint Co.
Fiske Bros. Refining Co., 24 State St., New York, N. Y.
Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (Sole Distributors for Sinclair Co., A. O., New York, N. Y. "Memo.") (See page 909.)
Gramoline Co., Lumber Exchange Bldg., Chicago, Ill. "Rusticene."
Karbonold Chemical Co., 318 East Ave., Elyria, O. "Non-Rustine."
Meno—See Frasse & Co.
No-Ox-Id—See Dearborn Chemical Co.
Non-Rustine—See Karbonold Chemical Co.
Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."
Oakite—See Oakley Chemical Co.
Parker Rust Proof Co., 2177 Milwaukee Ave., Detroit, Mich.
Permatex Solvo-Rust—See Benoit, Constant A.
Polygon Products Co., 141 Milk St., Boston, Mass. "Tasgon." (See page 279.)
Raven—See Berry Bros.
Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y.
Rust Products Co., 64 E. Lake St., Chicago, Ill. "Rustsolve."
Rust Proof Mfg. Co., 1779 Atlantic Ave., Brooklyn, N. Y.
Rusticene—See Gramoline Co.
Rustsolve—See Rust Products Co.
Sinclair Co., A. C.—See Frasse & Co.
Stazon—See Conversion Products Co.
Tasgon—See Polygon Products Co.
Vatudrip—See American Rust Proof Co.

COMPOUNDS, SPOKE TIGHTENING—See Compounds, Wood Wheel Tightening

COMPOUNDS, Tar Removing

(For removing Tar or Road Oils from bodies)

Be-Be-Co.—See Boston Blacking Co.
Benoit, Constant A., Brooklyn, N. Y. "Permatex Taroff." (See page 227.)
Bintliff-Laing Co.—See Van Buren Co.
Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
Cooper & Osterhout, 242 Vanduser St., Watertown, N. Y. "Taroff."
Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
Franklin Distributing Co., 143 Elmwood Ave., Buffalo, N. Y.

Johnson & Son, S. C., 1012 16th St., Racine, Wis.
Mirrolike Mfg. Co., 202 Eighth St., Long Island City, N. Y.
Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.
No mo Tar—See Van Buren Co.
Noble Plano Co., 4841 Woodward Ave., Detroit, Mich. "Tar-Off."
Permatex Taroff—See Benoit, Constant A.
Polygon Products Co., 141 Milk St., Boston, Mass. "Tarr-Gon." (See page 279.)
Ray Chemical Co., 53 Halsey St., Newark, N. J. "Rayco."
Rayco—See Ray Chemical Co.
Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Tar-Off."
Sanosone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill.
Tar-Off—See Noble Plano Co.
Tar-Off—See Rust-Off Mfg. Co.
Taroff—See Cooper & Osterhout.
Tarr-Gon—See Polygon Products Co.
Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. (Sales Department for Bintliff-Laing Co., Plainfield, N. J. "No mo Tar.")

COMPOUNDS, Tire Filling

(Rubber or composition filling for Pneumatic Tires to be used in place of air)

Aero-Cushion Inner Tire & Rubber Co., Genesee Ave., Saginaw, Mich.
Aero Cushion Tire Co., 535-37 W. Santa Clara St., San Jose, Cal.
Alastic Tire Cushion Co., 1419-21 Locust St., St. Louis, Mo.
Burgess Tire Co., 15th & Troost St., Kansas City, Mo.
Carter-Bell Mfg. Co., Morris Ave., Millburn, N. J.
Cut Weld—See Keystone Rubber Mfg. Co.
Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.
Elgin Rubber Ace Co., Elgin, Ill.
Essenkay Products Co., 220 W. Superior St., Chicago, Ill.
Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."
National Rubber Filler Co., 220 Main St., Midlothian, Tex.
National Synthetic Rubber & Tire Co., 2 Recor St., New York, N. Y. "Reslonite."
National Tire Cushion Co., 1511 McGee St., Kansas City, Mo.
Newmastic Co., Cleveland, O.
Peerless Tire Fill Co., 7119 N. Clark St., Chicago, Ill.
Reslonite—See National Synthetic Rubber & Tire Co.
Skalex—See Northwestern Chemical Co.
Universal Tire Filler Co., 441-48 Hawthorne Ave., Portland, Ore.

COMPOUNDS, Tire Preserving

(Chemical compound or paint for applying to tires to preserve the rubber—See also Paints, Rubber.)

Dees & Wheatley, 41 Main St., Midlothian, Tex.
Kepuruber—See Rubber Preserving Co.
Rubber Preserving Co., Otis Bldg., Chicago, Ill. "Kepuruber."
Says-O Co., Asylum & Ann Sts., Hartford, Conn.

Everything is listed under the NOUN or principal word

To Prepare Automobile Bodies for Painting Use DEOXIDINE—It Prevents Rust

from forming under the paint

Deoxidine prevents rust from forming under paint. Removes, rust, dirt, oil, grease, hand marks, acids, before painting. Prevents all defects from developing in the painted finish. Deoxidine is successfully used by the leading automobile makers.

AMERICAN CHEMICAL PAINT COMPANY

3012 Singer Building
New York

1118 So. Eleventh St.
Philadelphia

273 East Jefferson St.
Detroit



storage batteries

USL batteries have Machine-Pasted Plates and are correctly built in every detail.

USL batteries are sold by 1700 Service Stations and 2800 USL Dealers.

U. S. Light & Heat Corporation
Niagara Falls, N. Y.

Branches: New York, Detroit, Chicago, Kansas City, San Francisco, Washington; D. C.



WHY buy a different cure for every "trouble" when a can of Tasgon will do the trick quicker, easier and cheaper?

Whenever you use a wrench—use Tasgon. Dissolves rust. Instantly loosens bolt, nut or joint. A time and labor saver—a necessity in machine or railroad shop, garage, factory, mine, on the farm and in the home.

A miracle worker for automobilists. Prevents carbon, stops squeaks in springs, primes cold motors, loosens spark plugs, removes rust. And does not injure any part it touches.

Get Tasgon to-day from your hardware or automobile supply store. Comes in half-pint, pint, quart and gallon cans. Nozzle-top pint can sent prepaid on receipt of \$1.00 if your dealer cannot supply you.

Polygon Products Company
141 Milk Street Boston, Mass.

(Made by Samuel Cabot, Inc.)

Automotive Equipment and Supplies

Vesta Storage Batteries
Schebler Carburetors
Eisemann Magnetos

K-W Magnetos
Hartford Shock Absorbers
Gray & Davis Starters

Magnetos, Coils and Storage Batteries Repaired
Prompt and satisfactory service. Wholesale only.

REINHARD BROTHERS COMPANY

11-13 South Ninth Street
MINNEAPOLIS, MINN.

Please mention The Automobile Trade Directory

COMPOUNDS, Tire Repair*(For filling cuts in outer casings or shoes)*

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Kutite."
 American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."
 Atlas Auto Supply Co., 987 W. Austin Ave., Chicago, Ill. "Tire Doh."
 (See page 229.)
 Boska—See Standard Tire Filler Co.
 C. O. T. Gum Gum—See Tingley & Co.
 Cut Weld—See Keystone Rubber Mfg. Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Eastern Rubber Co., Penna. Ave & Brown St., Philadelphia, Pa. "Magic."
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Ev-R-Wear—See Young Rubber Products Co.
 Firestone Tire & Rubber Co., Miller & Swetsler Ave., Akron, O.
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "M. & M. Kneadit."
 Goodrich Co., E. F. S. Main St., Akron, O.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
 (See page 229.)
 Henry's—See Perfectix Rubber Co.
 Jiffy—See Johnstown Rubber Co.
 Johnstown Rubber Co., Johnstown, Pa. "Jiffy."
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."
 Kushlon-Kore—See American Kushlon-Kore Tire Co.
 Kutite—See American Automobile Accessories Co.
 Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
 M. & M. Kneadit—See Giant Tire & Rubber Co.
 Magic—See Eastern Rubber Co.
 Mastio—See Michelin Tire Co.
 Meno Products Co., 537 Rosedale St., (Wilkinsburg), Pittsburgh, Pa.
 Michelin Tire Co., Milltown, N. J. "Mastic."
 Miller Rubber Co., Akron, O. "Pluggum."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
 Northwestern Chemical Co., 785 State St., Marietta, O. (See page 277.)
 Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Tite-Wad."
 Perfectix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.
 Pluggum—See Miller Rubber Co.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa. "Quakerdo."
 Quakerdo—See Quaker City Rubber Co.
 Red Cross—See National Rubber & Specialties Co.
 Red X—See St. Louis Rubber Cement Co.
 Rie-Nie—See Durkee-Atwood Co.
 S-V—See Williams Mfg. Co.
 St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "Red X."
 Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."
 Stickfast—See American Rubber & Tire Co.
 Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.
 Tingley & Co., Chas. O. Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T. Gum Gum."
 Tire-Doh—See Atlas Auto Supply Co.
 Tire-Tite—See Vul-Tex Mfg. Co.
 Tite-Wad—See Page-Lester Co.

Treado Mfg. Co., 42 Dwight St., Springfield, Mass.

Two in One—See Van Cleef Bros.
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Two in One."
 Vul-Tex Mfg. Co., 140 E. Lake St., Minneapolis, Minn. "Tire-Tite."
 Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."
 Wonder Worker—See Hall-Thompson Co.
 Young Rubber Products Co., St. Louis, Mo. "Ev-R-Wear."

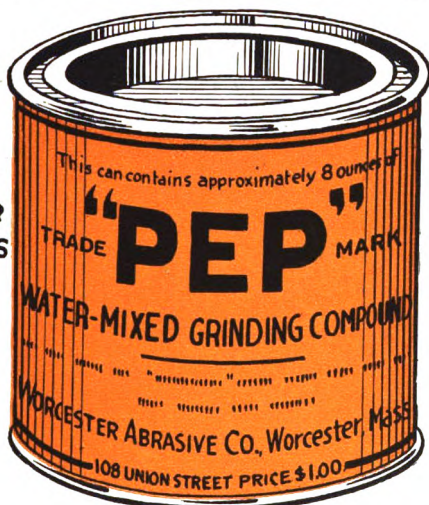
COMPOUNDS, Valve Grinding*(Specially prepared abrasives compounds for grinding engine valves)*

Auto Equipment Co., 33 Hollywood Ave., East Orange, N. J. "Eureka."
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Bridgeport Wood Finishing Co., New Milford, Conn. "Lithowite."
 Carborundum Co., Niagara Falls, N. Y.
 Clover Mfg. Co., 410 Main St., Norwalk, Conn. (See page 763.)
 Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.
 Diamond—See Hall-Thompson Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 E-Fec-Tiv—See Permatite Mfg. Co.
 E. Z.—See International Mfg. & Sales Co.
 Empire Specialty Co., E. Orange, N. J. "Rapidcut."
 Eureka—See Auto Equipment Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for "Eureka" Compounds.) (See page 243.)
 Graham Roller Bearing Corp., Condersport, Pa. (See page 227.)
 Grindan Mfg. Co., Albany, N. Y.
 Grynodyn—See Miller Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Quick Kut," "Diamond." (See page 229.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Instant Products Co., 521 Cambria St., Boston, Mass.
 International Mfg. & Sales Co., 6304 Wallace St., Chicago, Ill. "E. Z.," "Peerless," "X. L."
 Jiffy—See Re-Nu-R Products Co.
 Johnson & Son, S. C., 1013 16th St., Racine, Wis.
 Lightning Mfg. Co., Cornish Flat, N. H.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Lithowite—See Bridgeport Wood Finishing Co.
 M. & M. Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 977.)
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y. "Grynodyn," "Standard."
 Mirrolite Mfg. Co., 303 Eighth St., Long Island City, N. Y.
 Mohawk Grinding Paste Mfg. Co., Albany, N. Y.
 Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.
 Nation Co., 322 W. 16th St., Los Angeles, Cal.

Everything is listed under the NOUN or principal word

INSIST ON THIS YELLOW CAN

**PUTS PEP
AND POWER
INTO MOTORS**



**ONE GRADE
FOR
ALL JOBS**

***The non-lubricating grinding
compound that "Does the
Best Job in the Shortest Time"***

"PEP" contains no oil whatever. There is nothing in its paste-like mixture to retard the quick action of the abrasive.

"PEP" has a peculiar smooth-cutting property that cannot be found in any other grinding compound.

With "PEP" *one* grade does *all* the work. With other grinding compounds two separate grades, one for cutting and one for finishing, are usually necessary.

When the grinding is done the valve seats are wiped with damp cloths; that's all. But the result is—valve seats of glasslike smoothness, true and perfect in fit.

For quick and profitable results always use "PEP."

If not stocked by your jobber write us for discounts, giving jobber's name.

Always insist on the yellow can.

WORCESTER ABRASIVE COMPANY, Worcester, Mass.



SEE NEXT PAGE FOR LIST OF JOBBERS

ONE GRADE FOR ALL JOBS

[illegible]

Branch Offices
Boston, Mass.
San Francisco, Cal.

ORDER THRU YOUR JOBBER

PERFECTION

S P R I N G S

EATON AXLES

The greater sureness and economy with which driving power is transmitted, loads are protected, and riding comfort provided, account for the continuous specification of these parts year after year by leading automobile and truck manufacturers.

THE STANDARD PARTS COMPANY
CLEVELAND, OHIO

Stanweld

Rims

B O C K

B E A R I N G S



Please mention The Automobile Trade Directory

COMPOUNDS, Valve Grinding
(Continued)

National Valgrinok Co., 195 Church St., Newton, Mass. "Valgrinok."

Nock Co., Geo. W., 1804-06 Race St., Philadelphia, Pa. (Sole distributors for Purflex Mfg. Co., Philadelphia, Pa.)

Norwesco—See Northwestern Chemical Co.
Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
(See page 277.)

NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.

O. K.—See Ideal Valve Grinder Co.

Peerless—See International Mfg. & Sales Co.

Pep—See Worcester Abrasive Co.

Perma-Loc Mfg. Co., Wilkes-Barre, Pa.
(See page 705.)

Permatex—See Benoit, Constant A.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Pulvis—See Universal Products Co.

Purfex Mfg. Co.—See Nock Co.

Quick-Kut—See Hall-Thompson Co.

Rapidcut—See Empire Specialty Co.

Red Line, Inc., Grand Rapids, Mich.
(See page 607.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn. "Jifty."

Rie-Nie—See Durkes-Atwood Co.

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y.

Standard—See Miller Co.

Tungsten Mfg. Co., Marshalltown, Ia.
(See page 729.)

Universal Products Co., Jackson Bldg., Providence, R. I. "Pulvis."

Valgrinok—See National Valgrinok Co.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Volcano Mfg. Co., 923 W. 51st Pl., Los Angeles, Cal.

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

Worcester Abrasive Co., Worcester, Mass. "Pep."

(See pages 281 and 282 and Book Mark.)
Zip Mfg. Co., Mint Bldg., Denver, Colo.

COMPOUNDS, VULCANIZING—See Com-
pounds, Tire Repair**COMPOUNDS, Welding**

Anti-Borax Compounds Co., 1502 Wall St., Fort Wayne, Ind. "E-Z;" "Crescent."

Banner—See Cortland Specialty Co.

Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."

Cortland Welding Compound Co., Cortland, N. Y. "Weld-A-Cast."

Crescent—See Anti-Borax Compounds Co.

E-Z—See Anti Borax Co.

Falls Chemical Works, Cedar Falls, Iowa.

Krems & Co., 173 N. Green St., Chicago, Ill. "Weldine."

Tip-It, Inc., 120 Broadway, New York, N. Y.

Weld-A-Cast—See Cortland Welding Compound Co.

Weldine—See Krems & Co.

Whittaker, Clark & Daniels, 250 Front St., New York, N. Y.

COMPOUNDS, WHEEL TIGHTENING —
See Compounds, Wood Wheel Tightening**COMPOUNDS, WIND SHIELD—See Com-**
pounds, Glass Wind Shield**COMPOUNDS, Wood Wheel Tight-**
ening

(For swelling and tightening loose spokes in wood wheels)

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Never Creak." (See page 229.)

Never-Creak—See Hall-Thompson Co.

Spoktite—See Woodtite Laboratories.

Wonder Worker—See Hall-Thompson Co.

Woodtite Laboratories, Modesto, Cal. "Spoktite."

COMPRESSED AIR ENGINE STARTERS—
See Starters, Compressed Air Engine**COMPRESSING TOOLS—See Tools, Valve**
Spring Lifting and Compressing**COMPRESSION COUPLINGS—See Unions,**
Tubing**COMPRESSION GAGES—See Gages, Cyl-**
inder Compression**COMPRESSION METERS—See Gages, Cyl-**
inder Compression**COMPRESSION RELIEF COCKS—See**
Cocks; also Cups, Spring Key**COMPRESSION TANKS—See Tanks, Vacu-**
um and Compression, Gasoline**COMPRESSION TESTERS—See Gages, Cyl-**
inder Compression**COMPRESSING WHISTLES—See Horns,**
Exhaust**COMPRESSORS, Garage Air**

A-F-S Machine Co., 513 S. St. Clair St., Toledo, O.

Acme Special Machine Mfg. Co., 14 Sigourney St., Hartford, Conn.

Akron-Williams—See Williams Foundry & Machine Co.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

American Electric Air Pump Co., 220 Penn. Ave., Pittsburgh, Pa.

American Steam Pump Co., Maple St., Battle Creek, Mich.

Au-To Compressor Co., Wilmington, O. "Oro."

Baker-Hansen Mfg. Co., Oakland, Cal.

Bastian Auto Engineering Works, 134 Tabor Rd. (Olney), Philadelphia, Pa. "M. L. B."

Binks—See Star Brass Works.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Lectroflator."

Brown Beer Pump Co., E. R., 11 Chardon St., Boston, Mass. "Success."

Brunner Mfg. Co., Utica, N. Y.
(See pages 286 and 287.)

Caldwell, R. L., 74 Cortland St., New York, N. Y. "Quickkate."

Champion—See Cleveland Faucet Co.

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.

Clayton—See International Steam Pump Co.
Cleveland—See National Motor Supply Co.

Everything is listed under the NOUN or principal word

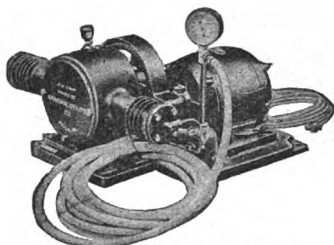
CURTIS CLUTCH DISCS

CURTIS Steel Clutch Discs are furnished in high carbon or soft steel, plain or slotted, flat or formed, unfinished or ground and polished, tempered or untempered—any size.

CURTIS CLUTCH
DISC CO.
1646 Kielen Ave.
St. Louis, Missouri



General Lightning Cut Piston Ring

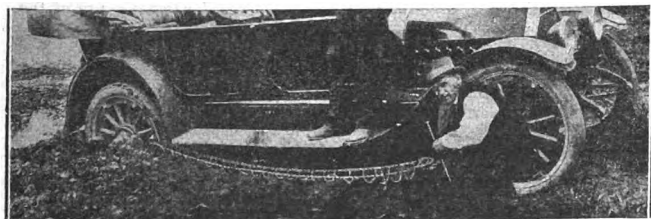


General Air Compressors

Two products of merit which are extensively advertised in the various trade papers and magazines. If interested, write for information.

General Utility Co.

1326-28-30 Ogden St., Philadelphia, Pa.
Export Dept., 17 Battery Place, New York



Stuck IN THE MUD?

Yes—but only for a minute if his dealer has sold him the most necessary Equipment a Motor Car can carry, namely,

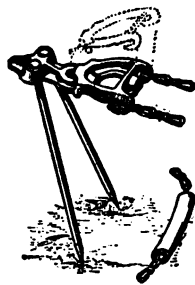
The Auto Chain Pull

A simple device that gives slipping wheels traction. When stuck in the mud, simply hook short link around felloe, attach to chain—then stretch chain out in the direction you wish to go. Next attach anchor plate to end of chain and drive down long anchor pins. Car will come out by winding chain on wheel and automatically unhook from anchor plate as wheel passes over it.

Big seller wherever shown. Write for Dealer's or Jobber's Proposition.

Robinson-Carter Company,

1711 Grand Ave.
Kansas City, Mo.

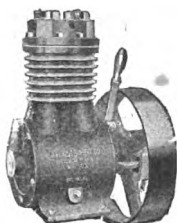


Please mention The Automobile Trade Directory

BRUNNER

BRUNNER AIR COMPRESSORS

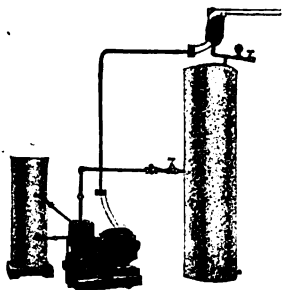
Handled by Leading Jobbers Everywhere



No. 102

No. 102—Double Cylinder Vertical Belt Driven Air Compressor

This compressor is designed for the average garage with line shaft. The bore is 1 1/8 in., stroke 3/4 in., guaranteed pressure 175 lbs. to the square inch (fitted for higher pressures upon order), capacity from 2 1/4 to 3 cubic feet free air per minute depending upon speed, splash system lubrication, floor space 6 1/4 in. by 10 in. Each cylinder is fitted with a reliable safety valve which can be readily adjusted for varying pressures which is absolutely dependable under all conditions. A very efficient, durable and economical compressor.



No. 247

No. 247—Heavy Duty Tire Service Outfit

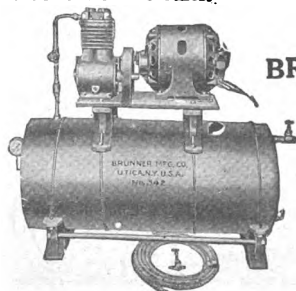
For serving giant pneumatic tires. Especially designed for installation where high pressure in generous volume is frequently required. This outfit is furnished complete with the exception of piping and includes our No. 47 two cylinder water cooled compressor, mounted with motor on cast iron base and operated by a 2 H. P. motor, 80 gallon Brunner heavy duty tank, No. 73 Brunner safety valve, Model B. air gauge, No. 70 horizontal check valve, No. 64 needle valve, No. 82 needle valve with swirl hose connection, two especially ground brass unions, one 25 foot length Brunner special air hose, (1/4"); and one automatic tire connection, cooling tank, automatic controller, safety fuses and all necessary fittings included. Capacity 7 cubic feet of free air per minute.

This outfit is large enough to take care of the heaviest air service, is reliable, economical, durable and everything about it is up to Brunner standards.

No. 542—Motor Driven Assembled Outfit
Especially designed for Gasoline filling stations, garage and similar installations where space is limited. Has sufficient capacity for garages housing up to 75 cars. Compressor—Two cylinder, air cooled having a displacement of 2 1/4 cubic feet of free air per minute, 1/2 H. P. motor capable of starting compressor against 130 lbs. pressure without overloading, extra heavy Brunner Air Tank, 22 gallon capacity. The outfit is complete, including air gauge, check valve, 25 feet 1/4 in. "Easistop" Air Hose connected to one No. 82 needle valve on one end and having an automatic tire connection on the other.

No. 742—Belt Driven Outfit

This is similar to the No. 542 described in adjoining column but designed for use where exceptionally quiet operation is desired. It is especially recommended for oil stations, small repair shops, accessory stores and other service stations occupying small quarters and where the noise incident to gear drives would be objectionable. It has the same equipment and same capacity as No. 542.

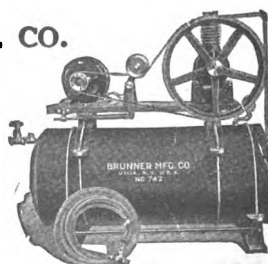


No. 542

BRUNNER MFG. CO.

UTICA, N. Y.

Sales Offices:
Utica, N. Y.
Cincinnati, O.
Kansas City, Mo.



No. 742

Please mention The Automobile Trade Directory

BRUNNER

BRUNNER AIR SERVICE FITTINGS

Handled by Leading Jobbers Everywhere

No. 66—Portable Tire Inflator

Designed for inflating tires direct without the aid of a tank and storage system. The compressor is a two cylinder, air-cooled, with accurately ground cylinders, piston and piston rings. The motor $\frac{1}{4}$ H. P., specially designed, powerful enough to meet all conditions, all accessories, including 30 feet of electric cord and plug, 20 feet Brunner "Resistoil" Air Hose, Tire connection, and air gauge to register tire pressure, makes this outfit complete and ready to operate when taken from the crate. An exceptionally good outfit for concerns operating a fleet of delivery trucks or salesmen's cars.



No. 66

No. 72—Brunner Safety Valve

Is an absolutely dependable safety valve. It has a ball seat, which is commercially air tight, and may be readily adjusted to blow off at any desired pressure up to 175 lbs. It is intended only as a tank safeguard by preventing higher tank pressure than that for which the valve is set. Furnished with either $\frac{1}{4}$ in., $\frac{1}{2}$ in. or $\frac{3}{4}$ in. male connection. $\frac{1}{2}$ in. supplied unless otherwise specified.



No. 72

Brunner Model "M" Pressure Controller

Automatically maintains air tank pressures between predetermined limits. It insures a constant supply of air, avoids delays, yet prevents waste of current caused by pumping after pressure in tank reaches that to which safety valve is set. It is very compact, substantially built and all moving parts are protected from dirt and dust.

Brunner Extra Heavy Galvanized Air Tanks

Are made of the very best Open Hearth Flange Steel, are heavily galvanized inside and out. They are made especially for air pressure and meet the most exacting specifications. Tested to 300 lbs.; guaranteed for a working pressure of 150 lbs. For special installations a heavier tank for 200 lb. working pressure may be had in genuine Brunner tank.



Air Tanks

Brunner "Resistoil" High Pressure Air Hose

Has an oil resisting inner tube, which in ordinary service will not become porous. It is especially made for air service, is guaranteed for 200 lbs. working pressure and will wear several times longer than ordinary air hose. Sizes $\frac{1}{4}$ in., $\frac{1}{2}$ in. and $\frac{3}{4}$ in.

No. 82—Brunner Needle Valve

For use in place of an ordinary air stop cock. One end is threaded to screw into the air line. Other end fitted with a swivel hose coupling to fit $\frac{1}{4}$ in., $\frac{1}{2}$ in. or $\frac{3}{4}$ in. hose. This valve is heavily constructed of brass suitable for 200 lbs. air pressure. It is absolutely air tight and is provided with stuffing box on the stem so that it can easily be repacked when necessary. Supplied with either $\frac{1}{4}$ in. or $\frac{3}{4}$ in. male connection, but $\frac{3}{4}$ in. is always furnished unless otherwise specified.



Model "M" Controller

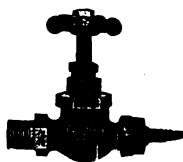
BRUNNER MANUFACTURING CO.

UTICA, N. Y.

Sales Offices: Utica, N. Y., Cincinnati, O., Kansas City, Mo.



Model "A" Gauge



No. 82



"Resistoil" Air Hose

Please mention The Automobile Trade Directory

COMPRESSORS, Garage Air (Continued)

- Cleveland Faucet Co., 708 Frankford Ave. N. W., Cleveland, O. "Champion."
- Crawford, D. A., Emlenton, Pa.
- Curtis Pneumatic Machinery Co., 1880 Kienlen Ave., St. Louis, Mo. (See page 815.)
- Davis—See Hinkley Machine Works.
- Dickerson, C. A., Fisher Bldg., Chicago, Ill. (Sole Distributors for Gardner Governor Co., Chicago, Ill.)
- Eureka Air Compressor Co., 242 Glenwood Ave., Bloomfield, N. J.
- Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
- Faultless—See Vulcan Engine Co.
- Fero Electric Air Pump Co., 509 Penwood St., Pittsburgh, Pa.
- Franklin Auto Parts Co., Franklin, N. H. (Sole Distributors for Franklin Machine Co., Franklin, N. H.)
- Gardner Governor Co.—See Dickerson, C. A.
- Gasco Mfg. Co., Lancaster, Pa. "Twentieth Century."
- General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. (See page 255.)
- Gifford Engine Co., Lansing, Mich.
- Globe Mfg. Co., 84 Grant St., Battle Creek, Mich. "Victory."
- H-B—See Hobart Bros. Co.
- Hale Electric & Engineering Co., Cleveland, O. (See page 157.)
- Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 829.)
- Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
- Herz, 182 Locust Ave., New York, N. Y. "Tantum," "Minimax."
- Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."
- Hobart Bros. Co., Troy O. "H-B."
- Imperial—See Ingersoll-Rand Co.
- Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Imperial."
- International Steam Pump Co., 115 Broadway, New York, N. Y. "Clayton."
- Jackson Compressor Co., 235 S. Cherokee St., Denver, Colo.
- Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Iowa.
- Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
- Kewanee Private Utilities Co., Franklin St. Kewanee, Ill.
- Lauchlin Air Starter & Tire Inflator Co., Green Bay, Wis.
- Lectroflater—See Black & Decker Mfg. Co.
- Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
- Little Giant—See Orange Machine & Mfg Co.
- Longstroke—See Motor Starter & Air Pump Co.
- Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.
- M. L. B.—See Bastian Auto Engineering Works.
- Master—See Hartford Machine Screw Co.
- Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
- Midvale Machine Works—See Wesco Supply Co.
- Minimax—See Herz.
- Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Longstroke." (See page 515.)
- Mueller, Wm. F., Farwell Ave. & Brady St., Milwaukee, Wis.
- National Brake & Electric Co., Larkin St. & Bellevue Pl., Milwaukee, Wis.
- Niebling & Co., F. W., Cincinnati, O.
- Orange Machine & Mfg. Co., 280 S. Jefferson St., Orange, N. J. "Little Giant."
- Oro—See Au-To Compressor Co.
- Pacific Air Compressor Co., 217 S. Grand Ave., Los Angeles, Cal.
- Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, O.
- Potts Mfg. Co., Mechanicsburg, Pa.
- Quickrate—See Caldwell, R. L.
- Smith, Irvin C., 1243 W. Pico St., Los Angeles, Cal.
- Spicer Mfg. Co., Groton, Conn.
- Star Brass Works, 2120 Carroll Ave., Chicago, Ill. "Binks."
- Stratton & Bragg Co., Petersburg, Va.
- Stroh & Dorman, Barborton, O.
- Stuckaman Bros., 330 Liberty Ave., Pittsburgh, Pa.
- Success—See Brown Bear Pump Co.
- Tandem—See Herz.
- Trageser Steam Copper Works, John, 447-57 W. 29th St., New York, N. Y. (See page 839.)
- Twentieth Century—See Gasco Mfg. Co.
- Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.
- Union Equipment Co., Butler, Pa.
- U. S. Air Compressor Co., 5306 Harvard Ave., Cleveland, O. "Usacor."
- United States & Cuban Allied Works, Bradford, Pa.
- Universal Pure Air Pump Co., 1607-11 Prairie Ave., Chicago, Ill.
- Utica Compressor Co., 819 Hamilton St., Utica, N. Y.
- Usacos—See U. S. Air Compressor Co.
- Victory—See Globe Mfg. Co.
- Vulcan Mfg. Co., 1511 Cypress Ave., Kansas City, Mo. "Faultless."
- Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)
- Westinghouse Air Brake Co., Pittsburgh, Pa.
- Williams Foundry & Machine Co., 100 Walnut St., Akron, O. "Akron-Williams."

COMPRESSORS, TRANSMISSION BAND SPRING FOR FORDS—See Tools, Transmission Band Spring Compressing

CONDENSERS, Electric

- Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.
- Millwood-Bracket Co., 1601 Locust St., Des Moines, Ia. (See page 169.)
- Wireless Specialties Apparatus Co., Boston, Mass.

CONDENSERS, Radiator

- (To be attached to radiator cap to prevent the loss of water or anti-freezing mixture and obviate the necessity of constant refilling of radiator)
- Cone-Denser Mfg. Co., 979-81 Central Ave., Minneapolis, Minn.
- Masco—See Mayer Auto Accessories Corp.
- Mayer Auto Accessories Corp., 452-54 Elmcott Sq., Buffalo, N. Y. "Masco."

CONDUIT, Flexible Car Wiring

- (Metal and fabric conduit; see also Tubing, Flexible Metals)
- Alphaduct Co., 136 Cator Ave., Jersey City, N. J.

Everything is listed under the NOUN or principal word

Tite flex

REG. U. S. PAT. OFF.

All-Metal Tubing

FLEXIBLE without sliding joints.

TIGHT without packing.

TITEFLEX is inherently tight.

The only all-metal tubing made from metal strip.

CARBURETOR and **EXHAUST** tubing.

CONDUIT for electric wiring.

LOOSTITE for high pressure and severe conditions.

Let us quote you

Titeflex Metal Hose Corporation

Badger Ave. & Runyon St.
Newark, N. J.



EVERY manufacturer represented by us is recognized as a maker of the highest class of merchandise. We base our reputation on the fact of selling only quality merchandise and by assisting our customers in the marketing of the goods purchased from us.

Clucker & Hixson Co.

Main Office
47 Murray Street
New York City

23 W. Peachtree St.
Atlanta, Ga.

For Manufacturers Car-Truck-Tractor

Ball Joints

Rattleproof Spark and Throttle Connections

Drag Links

All types of Safe Steering Connection Rods

Radius Rods

For Light Trucks

Starting Cranks

Efficient for all types of Motors

Tie Rods

Keep rattle and play from Front Axle Assembly

Torque Assembly

Arm and Socket type

CINCINNATI BALCRANK

For Jobbers and Dealers

Bumper—All cars

Protection, Appearance, Universal Fittings

Ball Joints—All cars

Always tight

Drag Links—Ford

Makes Fords Safe

Shock Absorber

Makes a big car ride correctly

Stabilizer—Ford

Real driving comfort

**The Cincinnati
Ball Crank Company**
90 North St. Cincinnati, O.

Please mention The Automobile Trade Directory

CONDUIT, Flexible Car Wiring (Continued)

American Metal Hose Co., Waterbury, Conn. (See page 291.)
 American Metal Molding Co., 141 N. J. Railroad Ave., Newark, N. J.
 Auto-Brassflex—See National Metal Molding Co.
 Autoflex—See National Metal Molding Co.
 Auto-Steelflex—See National Metal Molding Co.
 Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 581.)
 National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex," "Auto-Brassflex," "Autoflex." (See page 295.)
 Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 295.)

CONES, BALL—See Cups, Ball

CONNECTING ROD ALIGNING JIGS—See Jigs, Connecting Rod Aligning

CONNECTING ROD BABBITTING JIGS FOR FORDS—See Jigs, Main Bearing Connecting Rod Babbitting

CONNECTING ROD BUSHINGS—See Bushings, Bronze

CONNECTING ROD GAGES FOR FORDS—See Gages, Connecting Rod

CONNECTING ROD REAMERS FOR FORDS—See Reamers, Main Bearing and Connecting Rod

CONNECTING RODS—See Rods, Connecting

CONNECTING TOOLS, TRANSMISSION BAND SPRING FOR FORDS—See Tools, Transmission Band Spring Connecting

CONNECTIONS, Air System Tire

Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Loxon."
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Hansen Mfg. Co., Cleveland, O. (See page 1025.)
 Loxon—See Automatic Safety Tire Valve Corp.
 Romort Mfg. Co.—See Zinke Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 658 and 659.)

CONNECTIONS, BATTERY—See Connectors, Battery

CONNECTIONS, Brass Water

American Brass & Iron Co., Detroit, Mich. (See page 205.)
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Greer, Frederic, 535 W. Van Buren St., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Niagara Brass Mfg. Co., Lockport, N. Y.
 Standard Metalwork Co., 92-100 Prospect St., Thompsonville, Conn.
 Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.
 Whitlock Coll Pipe Co., Hartford, Conn.
 Western Brass Mfg. Works, Marshall Blvd. & 31st St., Chicago, Ill. (See page 263.)
 Wilkinson Co., Wm. H., Main St., West Medway, Mass.

CONNECTIONS, Gas Tubing

(Brass Y's, T's and L's for connecting Acetylene Headlights.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 171.)
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Uniform Seamless Wire Co., 71 Peck St., Providence, R. I.
 Western Brass Mfg. Works, Marshall Blvd. & 31st St., Chicago, Ill. (See page 263.)

CONNECTIONS, PUMP—See Connections, Tire Pump

CONNECTIONS, RADIATOR, FOR FORDS—See Hose, Radiator

CONNECTIONS, SPARK—See Joints, Ball

CONNECTIONS, Steering

Balcrank—See Cincinnati Ball Crank Co.
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 289.)
 S & W—See Schweppe & Wilt Mfg. Co.
 Schweppe & Wilt Mfg. Co., Mt. Elliott & Conant Aves., Detroit, Mich. "S & W."
 Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.
 Steel Products Co. (Michigan Plant) 7731 Conant Ave., Detroit, Mich.

CONNECTIONS, STEERING, FOR FORDS—See Links, Steering

CONNECTIONS, THROTTLE—See Joints, Ball

CONNECTIONS, Tire Pump

Acorn—See Stevens & Co.
 Acornette—See Stevens & Co.
 Adjustable Lighter Co., 13 Pearl St., Newton, Mass. "Larkin."
 Automatic Safety Tire Valve Corp., Long Island City, N. Y. "Whistler."
 Autoquip Mfg. Co., Rochester, N. Y. (See page 761.)
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 C & S—See Codman & Shurtleff.
 Chicago Recording Scale Co., Madison & Sand Sts., Waukegan, Ill. "Cresco."
 Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C & S."

Everything is listed under the NOUN or principal word

THE AMERICAN METAL HOSE CO.

WATERBURY, CONN.

SALES OFFICES

173 Lafayette St.
NEW YORK

29 East Madison St.
CHICAGO

54 Battery March St.
BOSTON

Union Bank Bldg.
PITTSBURGH

FLEXIBLE METAL HOSE

for Oils, Steam, Gasoline, Paint, Varnish and Vacuum

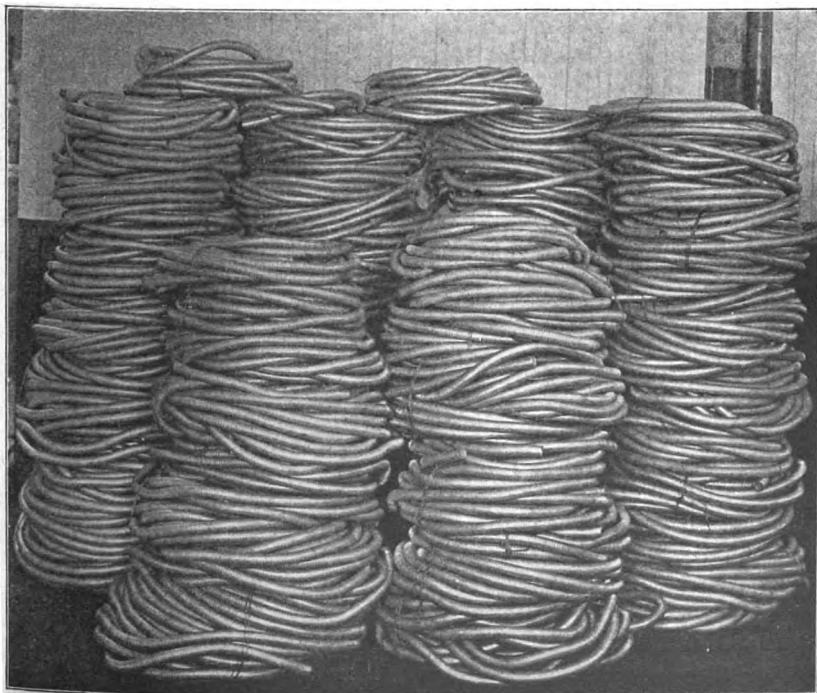
FLEXIBLE METAL TUBING

for Exhaust, Air, Carburetor and Heater Connections and Speedometer Casings

FLEXIBLE METAL CONDUIT

for insulating electric cables, etc.

AMERICAN METAL SPECIAL GASOLINE HOSE



10,000 ft. Carburetor Tubing Ready for Shipment

Please mention The Automobile Trade Directory

CONNECTIONS, Tire Pump (Continued)

Cresco—See Chicago Recording Scale Co.
 De Luxe—See Edelmann & Co.
 Edelmann & Co., E. 3633 N. Crawford Ave., Chicago, Ill. "Old Reliable," "De Luxe."
 Evertight—See Smith Bros. Garage.
 Gleason-Peters Air Pump Co., 324 Clason Ave., Brooklyn, N. Y.
 Gurnard Mfg. Co.—See Webber & Doyle.
 Hansen Mfg. Co., Cleveland, O. (See page 1025.)
 Ideal—See Stevens & Co.
 Judd & Leland Mfg. Co., Clifton Springs, New York, N. Y. (See page 751.)
 Keno—See Stevens & Co.
 King, L., Gerald, 21 Pine St., Deposit, N. Y.
 Larkin—See Adjustable Lighter Co.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Newton Mfg. Co., Church St., Plainville, Conn.
 Old Reliable—See Edelmann & Co.
 Perfect—See Youse Co.
 Perfection—See Smith Auto Co.
 Perfection—See Stevens & Co.
 Romort Mfg. Co.—See Zinke Co.
 Schrader's Son, A., Brooklyn, N. Y. (See page 506.)
 Smith Auto Co., Clyde H., Skowhegan, Me. "Perfection."
 Smith Bros. Garage, 467-69 Main St., Melrose, Mass. "Evertight."
 Stevens & Co., 275 Broadway, New York, N. Y. "Keno," "Perfection," "Acorn," "Ideal," "Acornette." (See page 201.)
 Thumlock—See Webber & Doyle.
 Webber & Doyle, 153 Cabot St., Beverly, Mass. (Sole distributors for Gurnard Mfg. Co., Beverly, Mass.). "Thumlock."
 Whistler—See Automatic Safety Tire Valve Corp.
 Youse Co., E. S., 46 N. Fifth St., Reading, Pa. "Perfect."
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 688 and 689.)

CONNECTIONS, TRAILER—See Couplers, Trailer

CONNECTIONS, TUBING—See Unions, Tubing

CONNECTOR DRILLS—See Drills and Bits, Battery Strap

CONNECTORS, Acetylene Lamp

(Flexible Metal Connectors; for Rubber Connectors—See Tubing, Soft Rubber)

Erege Mfg. Co., 255 South St., Newark, N. J.
 Pennflex—See Pennsylvania Flexible Metallic Tubing Co.
 Pennsylvania Flexible Metallic Tubing Co., Broad & Race Sts., Philadelphia, Pa.
 Titeflex Metal Hose Corp., Badger Ave. & Bunyon St., Newark, N. J. (See page 289.)

CONNECTORS, BELT—See Fasteners, Belt

CONNECTORS, Dry Battery

(See also Terminals, Wires)

Bailey Co., W. J., Newark, N. J. "C. B." *

Battery Parts Co., 434 Penn Ave., (Wilkinsburg Sta.), Pittsburgh, Pa.

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 295.)

Breznell, J. H., 26 Court St., Brooklyn, N. Y.

C. B.—See Bailey Co.

Chicago Electric Mfg. Co., 3317 S. Halsted St., Chicago, Ill. "Handy."

Fahnestock Electric Co., East Ave & Eighth St., Long Island City, N. Y.

Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Perfection," "Standard." (See page 439.)

Handy—See Chicago Electric Mfg. Co.

Harvard Electric Co., 535 W. Van Buren St., Chicago, Ill.

Hi-Po Waterproof Battery Corp., South Norwalk, Conn.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 243.)

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.

Perfection—See Fitzgerald Mfg. Co.

Shain, Chas. D., Brooklyn, N. Y.

Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 238.)

Standard—See Fitzgerald Mfg. Co.

CONNECTORS, Electric Lamp

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)

Amco—See Aid Mfg. Co.

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Chicago Electric Mfg. Co., 3317 S. Halsted St., Chicago, Ill. "Handy."

Cole & Co., Henry, 54 Old Colony Ave., Boston, Mass.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Douglas & Rudd Mfg. Co., Bronson, Mich.

Fawcett Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Connectors.) (See page 243.)

Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.

Handy—See Chicago Electric Mfg. Co.

Higginson-Gibson Mfg. Co., 76 Atherton St., Jamaica Plains, Boston, Mass.

Loewys, Edwin H., 304 W. 54th St., New York, N. Y.

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)

Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 169.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)

Presto—See Metal Specialties Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

CONNECTORS, LAMP—See Connectors, Acetylene Lamp; also Connectors, Electric Lamp

CONNECTORS, PUMP—See Connections, Tire Pump

Everything is listed under the NOUN or principal word

TERMINALS

The Only Complete Line

The Sherman Line includes a wire or cable terminal for every purpose in motor car construction.

U. S. Pat.



Release 14401

Sherman Soldering Lugs

Seamless Copper

Electrically and Mechanically Perfect



Sheet Copper and Brass.

A large range of styles and sizes.

Assortments for the trade, in attractive display boxes. Contain only the best selling styles.

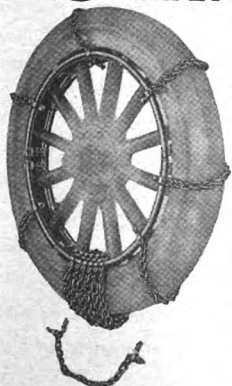
Send for Bulletin No. 7



H. B. SHERMAN MANUFACTURING CO.
Battle Creek Michigan

Lutz

"INDIVIDUAL" SAFETY Chains



1 or 100
CHAINS
WHEN
and
WHERE
THEY
ARE
NEEDED

Constantly change position on tread of tire. No damage to wheel or tire. Instantly attached or removed. Write for catalog and prices.

Lutz Company, Inc.

Morris, Bambrey & Moore Sts., Phila.



Trade Mark

Since commencing business in 1900 our policy has always been to stand back of our product, dealing with our customers as we ourselves would like to be dealt with. In soliciting the patronage of new trade we ask you to come to us with the feeling that you will always receive a square deal.



Smith No. 200

Tire Chain Lock

Prevents all possibility of loss of tire chains through clasp opening up. Packed in neat counter display box lithographed in colors (see illustration), containing 88 sets of locks.

List 25c per set (of 4).



No. 31 Trouble Lamp

Black enamelled outer body with separate solid brass silver plated inner reflector. 6v bulb.

List \$2.25.



No. 261A Ford Tail Lamp

Provides continuous electric service. Equipped with 2 bulbs, one 1.5v for dry cell use, and one 18v for magneto. Complete with cable and switch.

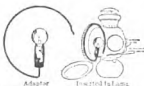
List \$2.25

Hard Rubber Connectors



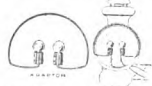
We make a complete line of high grade plugs and sockets. All plugs fitted with special heavy shoulder cap—no breakage. Jobbers and car equipment manufacturers—our prices are most attractive.

SMITH Electric Adaptors for Ford Oil Lamps



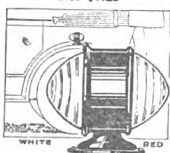
Springs in front flange of oil lamp and wired direct to magneto. Controlled by headlight switch. Complete with 18v bulb and cable. No. 266c.

List \$1.25



Provides continuous electric service. 18v bulb runs from magneto. 1.5v bulb from dry cell. Complete with cable and switch. No. 2266c.

List \$1.75.



No. 75 Parking Lamp

Takes the place of 3 regular head and tail lamps when car is standing, using only about one-fourth amount of current ordinarily consumed. 2 1/2" etched dome lenses, showing white in front, and red in rear. Attaches on rear outside fender.

List \$2.00

Write for catalog No. 8

F. A. SMITH MFG. CO., Inc. Rochester, N. Y.

CONNECTORS, Storage Battery

American Storage Battery Parts Co., 686-60 E. 163rd St., Cleveland, O.
(See page 295.)

Arthur Storage Battery Supply Co., 2540-43 Cottage Grove Ave., Chicago, Ill.
(See page 101.)

Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill.

Barcoy-Nicholson Co., 2301-19 W. Fort St., Detroit, Mich.

Benson Electric Co., 704 Southwest Blvd., Kansas City, Mo.

Common-Sense—See Peerblow Mfg. Co.

Meeco Spe-De—See Motor Electrical Equipment Co.

Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. "Meeco Spe-De." (See page 683.)

No-Krode Mfg. Co., 514 E. Pike St., Seattle, Wash.

Ohio Pattern Works & Foundry Co., 2730 Spring Grove Ave., Cincinnati, O.

Peerblow Mfg. Co., Leesdale, Pa. "Common-Sense."

Shonts Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. (Dealers.)
(See page 177.)

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 295.)

CONNECTORS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair**CONNECTORS, TRACTOR—See Clevises, Automatic Tractor****CONNECTORS, TRAILER—See Couplers, Trailer****CONSULTING ENGINEERS—See Engineers, Consulting****CONTRACT WORK—See Machine Work; also Screw Machine Products; also Stampings; also Castings; also Patterns****CONTRACTING BRAKES—See Brakes, Expanding and Contracting****CONTRACTING BRAKES FOR FORDS—See Brakes, Emergency Contracting****CONTROL CABLE—See Cable, Flexible Control****CONTROL LEVER BALLS—See Balls, Composition Control Lever****CONTROL LEVERS—See Levers, Brake****CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control****CONTROLLERS, Electric Motor**

(For varying speed of electric vehicles)

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis. "T-C."

General Electric Co., Schenectady, N. Y.
(See page 779.)

I-C—See Industrial Controller Co.
Industrial Controller Co., 336 Greenbush St., Milwaukee, Wis.
Western Electric Co., 463 West St., New York, N. Y.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

CONTROLLERS, RADIATOR TEMPERATURE FOR FORDS—See Covers, Automatic Radiator**CONTROLLERS, Storage Battery**

(For mounting on the Instrument Board to automatically reduce the charging rate if too high)

Battery Appliance Corp., 1 E. 49th St., New York, N. Y. "G. B. C."

G. B. C.—See Battery Appliance Corp.

CONTROLLERS, Vulcanizer Steam Pressure

(Automatic valve to regulate the flow of gas to the burner on a steam vulcanizer and so control the steam pressure)

Alliance Controller Co., Main St., Alliance, O.
Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.

Barton Mfg. Co., 890 N. Saginaw St., Flint, Mich. "Simplex."

Simplex—See Barton Mfg. Co.

CONTROLS, Auxiliary Tractor

(Auxiliary or extension control to permit operation of tractor from seat of implement)

Cherokee Guide Co., Cherokee, Iowa.

CONTROLS, CARBURETOR—See Controls, Dash and Steering Columns**CONTROLS, CARBURETOR, FOR FORDS—See Controls, Dash Carburetor****CONTROLS, Clutch, for Fords**

(Attachment for defining or indicating the neutral position of the clutch. For attachment for releasing the clutch when the foot brake is applied—See Releasers, Clutch.)

Kostaford Mfg. & Selling Co., Minneapolis, Minn.

Lewi Clutch Control Co., 295 Lark St., Albany, N. Y.

Norton, Frank W., 322 Third Ave. S., Minneapolis, Minn.

Shannon & Co., John, Stonington, Conn.

CONTROLS, Dash Carburetor for Fords

(For facilitating adjustment of Carburetor or for operating choke from seat)

D. & B.—See Harrington Co.

Harrington Co., O. C., 4133 Fillmore St., Chicago, Ill. "D. & B."

Everything is listed under the NOUN or principal word



"Auto-Steelflex"
Flexible Metallic Con-
duit and Fittings; Car-
buretor Tubing; Ex-
haust Tubing.

"Auto-Brassflex"
Flexible Metallic Conduit

"Auto-Flextube"
and
Special Flextube
Non-Metallic Flexible
Conduit.

Bulletins, Samples and Full Information Furnished Upon Request

National Metal Molding Co.

GENERAL OFFICES: PITTSBURGH, PA.

Atlanta
Boston
Chicago
Denver
Detroit

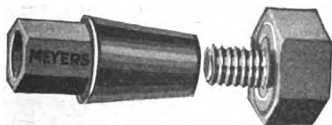
Los Angeles
New York
Philadelphia
Portland
Salt Lake City

San Francisco
Seattle
Buenos Aires
Rio de Janeiro

Sao Paulo, Brazil
Lima, Peru
Santiago, Chile
Medellin, Colombia

Havana
Manila
Mexico City
Shanghai, China

Canadian Distributors:
General Electric Company, Limited.



Plates
Connecting Straps
Top Connectors
Terminal Connectors
Taper Plugs
Terminal Screws
Clamp Terminals
Universal Terminals
Cases
Jars
Covers
Vent Plugs
Separators

Other Service Station Equipment

*Liberal Discount to Jobbers and
Service Stations*

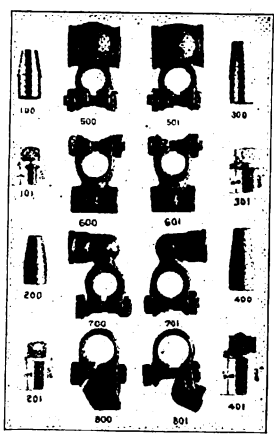
American Storage Battery Parts Co.

650-660 East 163rd St., Cleveland, Ohio

DEPENDABLE PRODUCTS

BATTERY
TOOL
PARTS
SUPPLIES

SERVICE
STATION
EQUIPMENT



Write for Catalog

STORAGE BATTERY SUPPLY CO.

1535 CHERRY ST., PHILADELPHIA, PA.

BELDEN MANUFACTURING COMPANY

Manufacturers of

**ELECTRICAL AND INSULATION MATERIAL
FOR AUTOMOTIVE EQUIPMENT**

2300 SOUTH WESTERN AVENUE

CHICAGO

Eastern Office and Warehouse: Metuchen, N. J.

Radiator Caps
Gear Shift Ball Handles
Wiring Harnesses
Ignition Cables

Magnet Wire, Textile Insulations
Magnet Wire, Enamel Insulation
Horn Wires
Lighting Wires

Send Us Your Inquiries

Please mention The Automobile Trade Directory

CONTROLS, Dash Carburetor for Fords (Continued)

Nance Mfg. Co., 1848 N. Clark St., Chicago, Ill.
 Porter, Inc., San Diego, Cal.
 Porter Products Corp., 670 Keith Bldg., Syracuse, N. Y. (See page 569.)
 Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 871.)
 Warner Carburetor Control Co., 8 E. Broad St., Columbus, O.

CONTROLS, Dash and Steering Column Carburetor

(For changing adjustment of carburetor from seat or operating choke for starting; See also Carburetors)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Breeze Mfg. Co., 255 South St., Newark, N. J.

CONTROLS, STEERING COLUMN — See Controls, Dash and Steering Column Carburetor

CONTROLS, TRACTOR — See Controls, Auxiliary Tractor

CONVERTERS, Chassis

(For connecting standard cars for truck and tractor purposes; for converters for Ford cars—See Converters, Chassis, for Fords.)

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Ameston."
 Amesbury—See Jackson Motor Car Co.
 Ameston—See Ames Co.
 Andrews Heating Co., 2529 University Ave. S. E., Minneapolis, Minn. "Big-Auto."
 Barber Motor Corp., 47-49 Lincoln Pl., Brooklyn, N. Y.
 Big-Auto—See Andrews Heating Co.
 Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.
 Burman, Chas. H., 3074 Broadway, Oakland, Cal.
 Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich.
 Cole Truckmobile Co., 408-10 Laflin St., Chicago, Ill.
 Dearborn Truck Co., Chicago, Ill. "Smith."
 E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. "Three-in-One." (See page 683.)
 Fitzall—See Hurdorf Co. of Chicago.
 Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.
 Guaranteed Tractors, Transportation Bldg., Chicago, Ill.
 Guaranty Motors Co., Cambridge, Mass. (See page 433.)
 Hedden Place Machine Co., East Orange, N. J. (See page 977.)
 Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
 Hoover Wagon Co., York, Pa.
 Hurdorf Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "Fitzall."
 Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.
 International Auto-Tractor Corp., 439 Fifth Ave., New York, N. Y. "Wales."
 Iowa Motor Truck Co., Ottumwa, Iowa.
 Keystone Motor Truck Corp., 42nd & Chestnut Sts., Philadelphia, Pa. "Truxton," "Unitrux."
 Mars Mfg. Co., Yakima, Wash.
 No-Chain Truck Unit Co., 8302-04 Lawton Ave., St. Louis, Mo.

Partford—See Partlow-Jenkins Motor Car Co.
 Partlow-Jenkins Motor Car Co., 319-33 E. Market St., Indianapolis, Ind. "Partford."

Phenix Truck Makers, 4943 Bloomingdale Rd., Chicago, Ill.

Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.

Six Wheel Truck Co., Fox Lake, Wis.

Smith—See Dearborn Truck Co.

Three-in-One—See E. & W. Mfg. Co.

Truxton—See Keystone Motor Truck Corp.

Union Truck Co., 250 W. 54th St., New York, N. Y.

Unitrux—See Keystone Motor Truck Corp.
 Victor Truck Co., 319 Main St., St. Joseph, Mich.

Waco Mfg. Co., 705 Delaware St., Kansas City, Mo.

Wales—See International Auto-Tractor Corp.

Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash.

Woodward & Rowe, 323 Van Ness Ave., San Francisco, Cal.

CONVERTERS, Chassis, for Fords

(For converting the Ford chassis for truck and tractor purposes; for converters for other cars—See Converters, Chassis.)

Adam, Hector C., 44 Whitehall St., New York, N. Y. "Carlmore."
 Adapto—See Geneva Tractor Co.
 Affordable Motor Truck Corp., 1154-58 N. 16th St., Omaha, Neb.
 Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."
 Amesbilt—See Ames Co.
 Amesbury—See Jackson Motor Car Co.
 Ameston—See Ames Co.
 Andrews Heating Co., 2529 University Ave. S. E., Minneapolis, Minn. "Handy-Hank."
 Arnold Motor Car Co., 191-307 Paterson St., Paterson, N. J.
 Auto-Motive Tractor Corp., Frederick, Md. "S. A. T."
 Axleford Truck Co., 7811 Crandon Ave., Chicago, Ill.
 Barber Motors Corp., 47-49 Lincoln Pl., Brooklyn, N. Y.
 Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga. "Ferguson."
 Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.
 Burman, Chas. H., 3074 Broadway, Oakland, Cal.
 Camelford—See Maremont Mfg. Co.
 Carlmore—See Adams, Hector C.
 Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich. "Detroit."
 Comdelcar—See Longford Co. of America.
 Dearborn Truck Co., Chicago, Ill. "Smith."
 Detroit—See Carrier Motor Truck Co.
 Diefenderfer Corp., A. J., 410 W. 52d St., New York, N. Y. "Hay Dee."
 EZE—See Hurdorf Co. of Chicago.
 E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. "Three-in-One." (See page 683.)
 Feeney Mfg. Co., Washington St. & Ohio Ave., Muncie, Ind.
 Ferguson—See Blount Carriage & Buggy Co.
 Flexo—See Hudson Motor Specialties Co.
 Franklin & Way Converter Co., Herald Bldg., Chicago, Ill.
 Geneva Tractor Co., 3 Factory Row, Geneva, O. "Adapto."
 Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.

Everything is listed under the NOUN or principal word

Die Casting Is No Longer Limited to Small Parts

THE pronounced trend toward larger die-castings is strikingly evidenced by this "Perry Auto-Lock" casting—one of the many big Stewart Die-Molded Castings.

This part would present a difficult sand casting job, rejections would be numerous, finishing costs high—and the finished job mediocre. Stamped, it would lack strength. Drop forged, it would be too expensive.

Handled by the Stewart process the finished job narrows to one low-cost buffing operation!

The manufacturer has shown far-sighted judgment in placing the die-casting of this part in the hands of a stable organization whose facilities and resources insure the fair dealing, prompt deliveries and superior castings that have for years been associated with the known name—Stewart.

Send a blue print or casting for quotation.
Every quotation is accompanied by a definite guarantee of delivery.

*Typical
of the
Many Big
Stewart
Die-Molded
Castings*



Stewart Manufacturing Corporation
4500 Fullerton Avenue, Chicago

Also manufacturers of Stewart Bronze-Back Bearings.

Please mention The Automobile Trade Directory

CONVERTERS, Chassis, for Fords (Continued)

Greb Co., 195 State St., Boston, Mass.
"Grebford." (See page 747.)
Grebford—See Greb Co.
Guaranteed Tractors, Transportation Bldg., Chicago, Ill.
Guaranty Motors Co., Cambridge, Mass.
(See page 433.)
Handy-Hank—See Andrews Heating Co.
Hay Dee—See Diefenderfer Corp.
Hedden Place Machine Co., East Orange, N. J. "Stevenson." (See page 977.)
Hendricks—See Prescott Co.
Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
Hoover Wagon Co., York, Pa.
Huddford Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "EZE."
Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Flaco."
Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.
Indestructible Wheel Co., Lebanon, Ind.
Iowa Motor Truck Co., Ottumwa, Iowa.
Ita Manufacturers, Glen Ellyn, Ill.
Jewett Truck Attachment Co., S. William St., Newark, O.
Jiffy—See Northfield Iron Co.
Keystone Machine Co., 184 N. Beaver St., York, Pa. "Multa-Power."
Keystone Motor Truck Corp., 42d & Chestnut Sts., Philadelphia, Pa. "Truxton," "Unitrux."
Lakeside Motor Truck Co., 2310 S. Michigan Ave., Chicago, Ill.
Longford Co. of America, 80 Charles River Rd., Cambridge, Mass. "Comdelcar."
Maremont Mfg. Co., 816-18 Wabash Ave., Chicago, Ill. "Camelford."
(See page 901.)
Mars Mfg. Co., Yakima, Wash.
Multa-Power—See Keystone Machine Co.
Mc-Chain Truck Unit Co., 2302-04 Lawton Ave., St. Louis, Mo.
Northfield Iron Co., Jiffy Bldg., Northfield, Minn. "Jiffy."
Odell One-Ton Truck Attachment Co., 541 Peachtree St., Atlanta, Ga.
Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.
Olson—See Swedish Crucible Steel Co.
P. B. B.—See Greb Co.
Partford—See Partlow-Jenkins Motor Car Co.
Partlow-Jenkins Motor Car Co., 319-33 E. Market St., Indianapolis, Ind. "Partford."
Phoenix Truck Makers, 4945 Bloomington Rd., Chicago, Ill.
Prescott Co., Sumner E., 402 Occidental Ave., Seattle, Wash. "Hendricks."
Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.
Robinson Motor Truck Co., 141 N. Ninth St., Minneapolis, Minn. "Utility."
S. A. T.—See Auto-Motive Tractor Corp.
Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.
Smith—See Dearborn Truck Co.
Stevenson—See Hedden Place Machine Co.
Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Olson."
Three-in-One—See E. & W. Mfg. Co.

3 P. Auto Tractor Co., 512 E. Fourth St., Davenport, Ia.
Truxton—See Keystone Motor Truck Corp.
Union Truck Co., 250 W. 54th St., New York, N. Y.
United Auto Dealers Mfg. Co., 331-43 Bergen St., Brooklyn, N. Y.
Unitrux—See Keystone Motor Truck Corp.
Utility—See Robinson Motor Truck Co.
Victor Truck Co., 319 Main St., St. Joseph, Mich.
Waco Mfg. Co., 705 Delaware St., Kansas City, Mo.
Wayne Works, 16th & North F Sts., Richmond, Ind.
Weihaupt-Savage Co., 303 S. Fourth St., La Crosse, Wis.
Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash.
Will-Holl—See Wilson-Holland Mfg. Co.
Wilson-Holland Mfg. Co., Gratiot Ave. & French Rd., Detroit, Mich. "Will-Holl."
Wiseman-Elliott Mfg. Co., El Paso, Tex.
Woodward & Rowe, 323 Van Ness Ave., San Francisco, Cal.
Xtend-A-Ford Co., 1610 Glenwood Ave., Philadelphia, Pa.

CONVERTERS, Top, for Fords

(Attachment to convert old style tops to one-man tops)
Geissel & Sons, A., 435-37 N. Third St., Philadelphia, Pa.
Pennypacker Mfg. Co., 1004 Michigan Ave., Chicago, Ill.
Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

CONVERTERS, TRUCK—See Converters, Chassis

COOLERS, WATER—See Radiators, Water Cooling

COOLING FANS—See Fans, Radiator

COPPER CASTINGS—See Castings, Bronze and Brass

COPPER GASKETS—See Gaskets, Metallic

COPPER GASKETS FOR FORDS—See Gaskets, Cylinder Head

COPPER HAMMERS—See Hammers, Brass and Copper

COPPER MALLETS—See Hammers, Brass and Copper

COPPER MELTING FURNACES—See Furnaces, Brass and Copper Melting

COPPER RIVETS—See Rivets, Brass

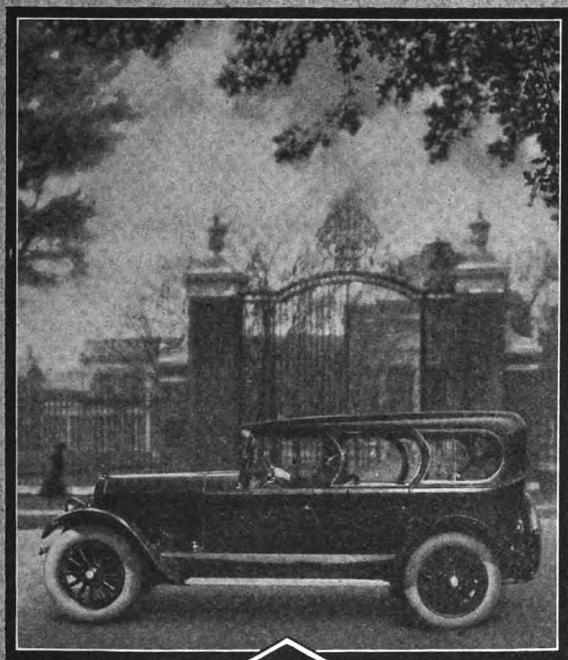
COPPER, ROD—See Brass, Sheet

COPPER, SHEET—See Brass, Sheet

COPPER SOLDERING IRONS—See Irons, Copper Soldering

COPPER, TUBE—See Tubing, Brass

Everything is listed under the NOUN or principal word



LEATHER **ZAPON** CLOTH

The upholstery that is washable

Send for samples showing the ZAPON
brands - Muleskin, Broncho and Mustang -
that are made especially for fine auto -
mobile upholstery and California Top work

ZAPON LEATHER CLOTH COMPANY

200 Fifth Ave., New York

Branches: Chicago, Detroit, Los Angeles, St. Louis

Please mention The Automobile Trade Directory

CORD, Airplane Rubber

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco."
(See page 121.)

United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."

Usco—See United States Tire Co.

Whitely Exerciser Co., 36 Vesey St., New York N. Y.

Wood Elastic Web. Co., J. W., Stoughton, Mass.

CORD, COACH—See Lace, Coach

CORD, RUBBER—See Cord, Aeroplane Rubber

CORE COMPOUNDS—See Compounds, Core

CORE HOLE PLUGS—See Plugs, Core Hole

CORED BARS—See Metals, Bearing

CORES, SPARK PLUG—See Mica; also Porcelain

CORES, TIRE VULCANIZING—See Molds, Tire Vulcanizing

CORKS, Brake and Clutch Insert

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Cork Insert Co., 164 Federal St., Boston, Mass.

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Mundt & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. (See page 301.)

Paddock Cork Co., 1309-17 De Kalb Ave., Brooklyn, N. Y. (See page 301.)

CORK FLOATS—See Floats, Cork

CORK GASKETS FOR FORDS—See Gaskets, Cork

CORK PULLEY COVERS—See Covers, Cork Pulley Rim

CORK WASHERS—See Washers, Cork

COST SYSTEM BOOKS—See Books, Accounting

COST SYSTEMS—See Books, Accounting

COTTER PIN PULLERS—See Pullers, Cotter Pin

COTTER PINS—See Pins, Cotter

COTTERS, SPLIT—See Pins, Cotter

COTTON BELTS—See Belts, Endless Fabric

COTTON FELT, UPHOLSTERY—See Moss, Upholstery

COTTON TIRE FABRICS—See Fabric, Cotton Tire

COTTON WASTE—See Waste, Cotton

COTTON WEBBING—See Webbing, Jute and Cotton

COUCHES, REPAIR—See Trucks, Repair

COUNTERBALANCES, Crankshaft, for Fords

Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.

COUNTERBORES

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Mfg. Co., 5 Harvard St., New Britain, Conn.

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.

COUPLERS, Tractor

Buller Coupler Co., Hillsboro, Kans.

Curtis Tractor Co., 413-17 20th Ave., N., Minneapolis, Minn.

Ferris—See Ohio Motor Vehicle Co.

Ohio Motor Vehicle Co., Oakview & Nottingham Rd., Cleveland, O. "Ferris."

Reliable Tongue Hitch Mfg. Co., 36 W. Randolph St., Chicago, Ill.

COUPLERS, Trailer

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Buller Coupler Co., Hillsboro, Kans.

Corwin Coupler Co., 21 Osborn St., Wellsville, N. Y.

Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.

Ekern-Turk Mfg. Co., Pipestone, Minn.

Romine Mfg. Co., Goodland, Ind.

Royal Machine Co., Cincinnati, O.

COUPLERS, Trailer, for Fords

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Buller Coupler Co., Hillsboro, Kans.

Corwin Coupler Co., 21 Osborn St., Wellsville, N. Y.

Ekern Mfg. Co., 3734 Tennyson Rd., Cleveland, O.

Litshaul—See Puffer-Hubbard Mfg. Co.

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S. Minneapolis, Minn. "Litshaul."

Romine Mfg. Co., Goodland, Ind.

COUPLINGS, BELT—See Fasteners, Belt

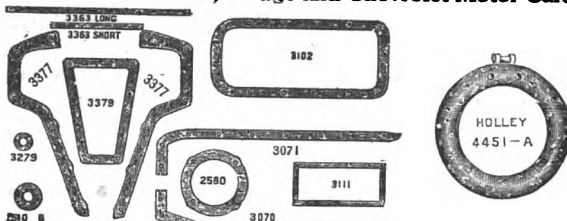
COUPLINGS, CLUTCH—See Couplings, Motor Boat Clutch

Everything is listed under the NOUN or principal word

Jointite
CORK GASKETS

Cork Gaskets for Ford, Dodge and Chevrolet Motor Cars

**Cork Gaskets
for all other
makes of cars**



L. MUNDET & SON, INC.

Main Office: South 11th and Berry Streets, Brooklyn, New York

Fidelity Mills

Cleaning
Textiles-Cloths
Polishing

**THE J. MILTON HAGY
WASTE WORKS
PHILADELPHIA**

**Bee
Cee**

**QUALITY
PRODUCTS**

1921

**Catalog
No. 16**

152 pages

Every Electrical
Service and Ignition
Repair Concern should
have

**Catalog
No. 16**

Replacement Coils
Magneto Repair Parts
Carbon, Gauze and
Metal Brushes
Distributor Caps and
Rotors
Platinum and Tungsten
Contacts
Plugs, Sockets and
Connectors
Wire Assemblies
Instrument Board and
Inspection Lamps
Edmunds & Jones Corp.
Lamps
Fuses
Ammeters
"Tung-Sol" Bulbs

Write for Catalog—Discounts

BROWN & AINE
INC.

MANUFACTURERS - DISTRIBUTORS
IGNITION AND LIGHTING SUPPLIES
2317-21 Calumet Ave.
CHICAGO

PADDOCK CORK CO., 1209-17 DeKalb Ave., Brooklyn, N. Y.



CORK

Carburetor Floats
Crank Shaft Cap Liners
Crank Case Oil Retainers
Plungers for Grease and Oil Guns
Caps and Washers

**GRANULATED CORK WHEN MIXED
WITH GREASE MAKES NOISY GEARS
SILENT.**

Please mention The Automobile Trade Directory

COUPLINGS, COMPRESSION—See Unions, Tubing

COUPLINGS, FLANGE—See Couplings, Motor Boat Flange

COUPLINGS, FLEXIBLE—See Couplings, Motor Boat Flexible

COUPLINGS, Flexible Shaft

(For Universal Joints—See Joints, Universal)

Karge-Baker Corp., Phoenix, N. Y.

COUPLINGS, GENERATOR—See Couplings, Magneto

COUPLINGS, HOSE—See Clamps, Hose

COUPLINGS, Magneto & Generator

Acme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.

Bailey Mfg. Co., Union City, Ind.

Beehler Electric Equipment Co., Yuma, Colo.

Clark—See Dexter Co.

Olimax Motor Devices, Chagrin Falls, O. (See pages 409 and 705.)

Dexter Co., I. H., 183 Greenwich Ave., Goshen, N. Y. "Clark."

Eisemann Magneto Corp., 32-32d St., Brooklyn, N. Y. "Oldham." (See page 633.)

Hardy—See Thermoid Rubber Co.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Norwalk Auto Parts Co., Norwalk, Conn.

Oldham—See Eisemann Magneto Corp.

Thermoid Rubber Co., Trenton, N. J. "Hardy." (See page 551.)

Thompson Bros.—See Uniflex Coupling Co.

Uniflex Coupling Co., Lafayette Bldg., Philadelphia, Pa. (Sole Distributors for Thompson Bros., Philadelphia, Pa.)

Universal Motor Co., 39 Ceape St., Oshkosh, Wis.

COUPLINGS, Motor Boat Clutch

List Mfg. Co., E. J., Havana, Ill.

COUPLINGS, Motor Boat Flange

Nilson-Miller Co., 1800-06 Hudson St., Hoboken, N. J.

COUPLINGS, Motor Boat Flexible

Dexter Co., I. H., 183 Greenwich Ave., Goshen, N. Y.

Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.

Smith-Serrill Co., West St. Bldg., New York, N. Y.

Thompson Bros.—See Uniflex Coupling Co.

Uniflex Coupling Co., Lafayette Bldg., Philadelphia, Pa. (Sole Distributors for Thompson Bros., Philadelphia, Pa.)

COUPLINGS, PIPE—See Fittings, Pipe

COUPLINGS, SOLDERLESS—See Unions, Tubing

COUPLINGS, TRACTOR—See Couplers, Tractor

COUPLINGS, TRAILER—See Couplers, Trailer

COUPLINGS, TUBE—See Unions, Tubing

COVERS, AUTOMATIC RADIATOR—See Shutters, Automatic Radiator

COVERS, Automobile

(For covering automobiles when in the garage)

Atlas Specialty Mfg. Co., 16-23 E. 24th St., Chicago, Ill. (See page 307.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 97.)

Clifton Mfg. Co., 323-37 Pleasant St., Waco, Tex.

Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Dafco-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafco-Eustice Co.

Duk-Bak—See Dafco-Eustice Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Fitzwell—See Niagara Fabric Mfg. Co.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y. "Shuredry."

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Goss Co., J. C., 36 Woodbridge St., E. Detroit, Mich.

Kennedy Car Liner & Bag Co., Shelbyville, Ind. (See page 305.)

Landers Bros. Co., Dept. A2, Toledo, O. (See page 1048.)

Lockwood Mfg. Co., Kansas City, Mo.

Mikesell Brothers Company, 153 N. La Salle St., Chicago, Ill. "Pylox." (See page 315.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Pylox—See Mikesell Brothers Co.

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 119.)

Schott Bros. Co., Buckeye & Main Sts., West Salem, O.

Shuredry—See Fulton Bag & Cotton Mills.

Ustus—See Dafco-Eustice Co.

COVERS, Battery, for Fords

F. B. Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F. B. Electric & Mfg. Co., Detroit, Mich.) (See pages 619 to 622.)

Gasco—See General Auto Specialty Co.

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Everything is listed under the NOUN or principal word



*Back Rest
Cushion*

AUTOMOBILE *Fabric Products*

**Tire Covers, Radiator Covers,
Hood Covers, Cushions**

Dealers. Our complete line includes the styles and materials demanded by Motorists in your territory. The quality of fabrics is the best obtainable and prices and trade discounts leave you a satisfactory profit.

A. P. Co. TIRE COVERS are made in Fabric Leather and Enamelled Duck in two styles: (1) Side and Tread and (2) Side and Tread with inside band to cover tire and rim complete. Extra heavy fasteners. Made in all sizes and for all types of rims and tire carriers.

A. P. Co. CUSHIONS, made in several styles, sizes and finishes, are filled with prime Java Kapok. Weight less than half ordinary cushions of same size, and being non-absorbent are ideal for automobile use.



Tire Cover

For the Touring Motorist **"PERFECTION" AIR BED**

**Pneumatic Mattresses, Pillows
and Sleeping Bags**



Pneumatic Mattress and Sleeping Bag Inflated

"PERFECTION" Mattress can be inflated in a few moments with pump supplied and when deflated rolls into a small, compact bundle. Mattress conforms to every position of body and insures delightful, restful sleep, free from ground dampness. Made in various sizes of best quality rubber cloth, with or without pillow and sleeping bag. Endorsed by prominent explorers, sportsmen, tourists and members of Forest Service.



Mattress Deflated

Send for Catalogues of Automobile Fabric Products and "Perfection" Air Goods with prices and trade discounts.

ATLANTIC-PACIFIC MFG. CO.
129 Atlantic Avenue, Brooklyn, New York

Please mention The Automobile Trade Directory

COVERS, CANVAS SHIPPING—See Covers, Paper**COVERS, Cork Pulley Rim***(For covering fan pulleys to prevent belt slipping)*

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

COVERS, Fender*(Fabric covers designed to place over mud guards or fenders to protect them from being scratched when the car is being worked on.)*

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 983.)

Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.

Lockwood Mfg. Co., Kansas City, Mo.

Powers Mfg. Co., Waterloo, Ia.
(See page 581.)**COVERS, HOOD—See Covers, Radiator****COVERS, JOINT—See Boots, Steering Knuckle****COVERS, Lamp***(Leather or fabric covers for head or side lamps)*

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Economy Stay Co., Jefferson City, Mo.

Fitzwell—See Niagara Fabric Mfg. Co.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Landers Bros. Co., Dept A2, Toledo, O.
(See page 1049.)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

COVERS, Magneto*(Leather or Fabric Covers)*

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bailey-Fitzwell Co., 1316 S. Grand Ave., Los Angeles, Cal.

Bemco—See B. E. Mfg. Co.

Campbell—See Perkins-Campbell Co.

Chicago Rawhide Mfg. Co., 1801 Elston Ave., Chicago, Ill.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Duk-Bak—See Dafoe-Eustice Co.

Economy Stay Co., Jefferson City, Mo.

Fitzwell—See Niagara Fabric Mfg. Co.
Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Sutherland Co., F. L., 129 Beaumont St., Detroit, Mich. (See page 606.)

Ustus—See Dafoe-Eustice Co.

COVERS, METAL RADIATOR—See Shutters, Metal Radiator**COVERS, Oil Hole***(Stamped or turned metal dustproof covers for oil holes)*

Bay State Stamping Co., 320 Chandler St., Worcester, Mass. "Handy."

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)

Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.

Detroit Lubricator Co., 5942-5986 Trumbull Ave., Detroit, Mich.

Empress—See Bowen Products Corp.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Handy—See Bay State Stamping Co.

Higgins Machine Works, 25 Keystone St., Buffalo, N. Y.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Simplicity."

O. K. Mfg. Co., Dayton, O.

Simplicity—See Long Bros.

Tucker, W. H. & C. F., Hartford, Conn.
(See page 305.)**COVERS, Paper and Canvas Shipping***(For protecting cars during shipment)*Cleveland-Akron Bag Co., Cleveland, O.
(See page 97.)

Hettrick Mfg. Co., Toledo, O.

Kennedy Car Liner & Bag Co., Shelbyville, Ind. (See page 305.)

Nickerson Co., 173 State St., Boston, Mass.

Royal Textile Co., 200 Congress St., Boston, Mass.

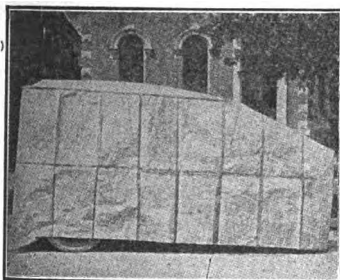
Safepack Paper Mills, 727 Atlantic Ave., Boston, Mass.

Seinsheimer Paper Co., York St. & McLean Ave., Cincinnati, O.

United States Tent & Awning Co., 229 N. Desplaines St., Chicago, Ill.

COVERS, PULLEY RIM—See Covers, Cork Pulley Rim

Everything is listed under the NOUN or principal word



Kennedy Auto Storage Covers

To meet the need of an inexpensive and efficient cover for automobiles while in dead storage we are making a paper cover, which is proving the right thing for this purpose.

These covers are made of strong, heavy paper, properly reinforced to prevent tearing.

They protect the car against dirt, dust and moisture and will prevent the polished portions from tarnishing and the finish from checking in cold weather.

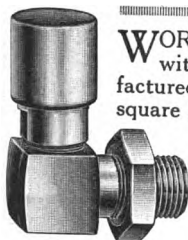
These covers are salable to individual car owners at a good profit as well as to furnish the dealer a protection for his stock of new cars.

We make them in four sizes: 7 Passenger, 5 Passenger, Ford Special, Electric. Winter will soon be here and dealers can handle these covers with satisfaction and profit. Further information on request.

The Kennedy Car Liner & Bag Co., Shelbyville, Ind.
Canadian Branch Factory: Woodstock, Ont.

TUCKER'S STYLE G ELBOW OILERS

Absolutely Dustproof

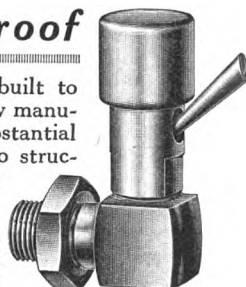


STYLE P CLOSED

Oilers to Meet Every Requirement

WORKED with oil can spout and built to withstand excessive vibration. Elbow manufactured from solid rod, having a substantial square head for wrench hold to attach to structure, and fitted with a binder nut. Always in position.

Do you know that when using our oilers on the spring shackles that the excess oil lubricates the spring leaves by capillary attraction?



STYLE P OPEN

Send for Catalogue No. 6



Style A



B



C



D

Open



E



F



G

Open

W. H. & C. F. TUCKER, Hartford, Conn.

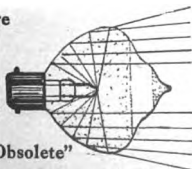
Electric Automobile Bulbs

Nitro and Vacuum Types—All Sizes

Simplex No Glare

The Auto Lamp of the Hour and Future

"Makes Lenses Obsolete"



We are the sole manufacturers of the SIMPLEX No Glare Auto Lamp shown in the illustration. The patented exclusive feature of this lamp is its Parabolic shape. The lower and upper portions are frosted. This forms a light-throwing reflector, directing a strong, clear light beam on the road. This bulb is legal from coast to coast and can be used with or without lenses. Simple and efficient—Sells wherever displayed. We also manufacture standard bulbs for headlights, dash and tail lights and also full line of lamps for all lighting purposes. Catalog, including prices, on request.

INTERNATIONAL INCANDESCENT LAMP WORKS, Inc.
Bergenline and Franklin Streets,

Union Hill, N. J., U. S. A.

Please mention The Automobile Trade Directory

COVERS, Radiator and Hood

(To prevent the water freezing in cold weather;
For Metal Radiator Covers—See Shutters, Metal
Radiator; For Automatic Shutters—See Shut-
ters, Automatic Radiator)

A. P. Co.—See Atlantic-Pacific Mfg. Co.
A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
Accurate Cover Co., 373 Canal St., New York, N. Y.
Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 335.)
Antidam—See Glover Equipment Co.
Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 303.)
Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
Ayers & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.
B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
Badger—See Wisconsin Auto Top Co.
Bemco—See B. E. Mfg. Co.
Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.
Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 983.)
Campbell—See Perkins-Campbell Co.
Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
Champion Auto Top Co.—See Frankel Specialties Corp.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
Co-Zee—See Omaha Auto Top Co.
Crawford Mfg. Co., 311 N. Foushee St., Richmond Va.
Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."
Deco—See Dafoe-Eustice Co.
Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-tec-Shun."
Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
Duk-Bak—See Dafoe-Eustice Co.
Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
Ero Mfg. Co., 763-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Esco—See Economy Seat Co.
Fitzwell—See Niagara Fabric Mfg. Co.
Fox-Cobe Mfg. Co., 280 Ninth Ave., New York, N. Y. "Rad-a-thaw." (See page 329.)
Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)
Frost King—See Cincinnati Auto Specialty Co.
Gasco—See General Auto Specialty Co.
General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
Genesee Mfg. Co., 616-18 Harrison St., Flint, Mich.
Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Glover Equipment Co., 412 N. Capital Ave., Indianapolis, Ind. "Antidam."
Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost."

Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.
Graessam Auto Co., 258 W. 69th St., New York, N. Y.
Hodes-Zink Mfg. Co., 313 W. State St., Fremont, O. "Sure-Fit."
Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."
Jack Frost—See Gordon Co.
Keystone Canvas Goods & Flag Co., 1012-18 Filbert St., Philadelphia, Pa.
Lockwood Mfg. Co., Kansas City, Mo.
McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
Mayhew—See Sutter-Mayhew Co.
Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)
Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Nickerson Co., 173 State St., Boston, Mass.
Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."
Only Grease Gun Co., Newton, Ia.
Paragon—See Doerner & Co.
Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 313.)
Powers Mfg. Co., Waterloo, Iowa. (See page 581.)
Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
Prince Auto Fabric Mfg. Co., 4104 Fort Hamilton Ave., Brooklyn, N. Y.
Pro-Tec-Shun—See Detroit Slip Cover Co.
Rad-a-thaw—See Fox-Cobe Mfg. Co.
R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.
Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.
Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
Sure-Fit—See Hodes-Zink Mfg. Co.
Sutter-Mayhew Co., 684 Canfield Ave., Detroit, Mich. "Mayhew."
Tatco—See Thomas Auto Top Co.
Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
Tymco—See Tyler Mfg. Co.
Universal Trimming Co., 3425 Michigan Ave., Chicago, Ill.
Ustus—See Dafoe-Eustice Co.
Wilcox Co., M. I., Water St., Toledo, O.
Wisconsin Top Co., Racine, Wis. "Badger." (See page 985.)
Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 307.)
Zero King—See Holden Mfg. Co.

COVERS, Radiator and Hood, for
Fords

(To prevent the water freezing in cold weather;
For Metal Radiator Covers—See Shutters, Metal
Radiator; For Automatic Shutters—See Shut-
ters, Automatic Radiator)

Accurate Cover Co., 373 Canal St., New York, N. Y.

Everything is listed under the NOUN or principal word

TIRE RADIATOR HOOD SPRING

COVERS

**TIRE COVERS IN ALL STYLES AND COLORS
RADIATOR COVERS FOR ALL CARS
HOOD COVERS IN PATENT LEATHER FINISH
SPRING LUBRICATING COVERS FOR ALL CARS**

Write for Prices and Discounts

WRIGHT COVER MANUFACTURING CO. (Not Inc.)

CHICAGO

1413 So. Michigan Ave.

ILLINOIS



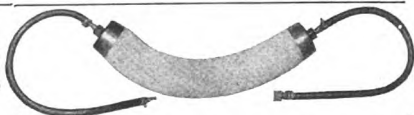
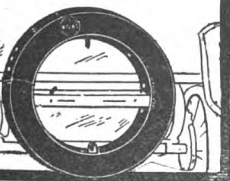
Tire Covers for tires attached to any car. Seat covers for Ford, Overland, Dodge & Maxwell exclusively. Complete line of fabric specialties for all cars. Curtain Light Replacements, Pillows, Etc.

Write today for
CATALOG

"Atlas" Specialties sell because they are "The Right Goods at the Right Price." Electros free to jobbers.

ATLAS SPECIALTY MFG. CO.

16 to 22 East 24th St.,
Chicago, Ill.



PERPETUAL AIR BAG CO.

Incorporated

Manufacturers of STEAM and AIR
BAGS for the VULCANIZATION OF
TIRES.

2103 SOUTH MICHIGAN AVENUE
CHICAGO, ILLINOIS

The Perpetual Air and Steam Bags are Best because:—

- They eliminate the use of pads.
- Aid in quicker and better cures.
- Is easily renewed at little or no expense.
- Is flexible, expanding until it entirely fills the casing.
- Last indefinitely and cost no more than other bags.
- Made in all sizes and lengths.

R-E RADIATOR AND HOOD COVERS

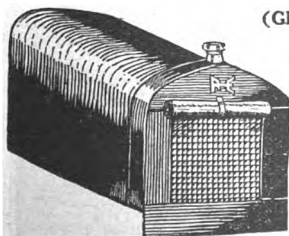
(GENUINE ASBESTOS LINED)

FOR ALL FORD CARS

Made of fine leather grain material laid on heavy asbestos center and lined with high quality gray felt or burlap. These materials all wear well and the top is guaranteed not to crack or peel.

Also made in all sizes to fit all cars. We will gladly send prices and catalog describing our complete line on request.

**THE ROOSE
MANUFACTURING COMPANY**
827-833 W. MAIN ST., LOUISVILLE, KY.



Please mention The Automobile Trade Directory

COVERS, Radiator and Hood for Fords (Continued)

A. P. Co.—See Atlantic-Pacific Mfg. Co.
 Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
 Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 303.)
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Ayers & Sons, Wm. Cumberland & Fourth Sts., Philadelphia, Pa.
 B. E. Mfg. Co., 220 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Buob & Schen, 500-10 Webster Ave., Cincinnati, O. (See page 953.)
 Campbell—See Perkins-Campbell Co.
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (See page 983.)
 Co-Zee—See Omaha Auto Top Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
 Foud—See Hopewell Bros.
 Frost King—See Cincinnati Auto Specialty Co.
 Gasco—See General Auto Specialty Co.
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost."
 Goss Co., J. C., 36 Woodbridge St., S., Detroit, Mich.
 Harac Sales Co., Drexel Bldg., Philadelphia, Pa.
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."
 Hopewell Bros., Watertown, Mass. "Foud." (See page 641.)
 Jack Frost—See Gordon Co.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo.
 Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Nickerson Co., 173 State St., Boston, Mass.
 Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."
 Paragon—See Doerner & Co.
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
 Phoenix Carriage Co., Cincinnati, O. (See page 313.)
 Phoenix Tent & Awning Co., First & Monroe Sts., Phoenix, Ariz.
 Powers Mfg. Co., Waterloo, Ia. (See page 551.)
 Premier Auto Novelty Mfg. Co., 875 W. Broadway, New York, N. Y.
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
 Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
 Wilcox Co., M. I., Water St., Toledo, O.
 Zero King—See Holden Mfg. Co.

COVERS, RIM—See Covers, Spare Tire

COVERS, SEAT—See Covers, Slip

COVERS, SHIPPING—See Covers, Paper and Canvas Shipping

COVERS, Slip

(See also Tops, Automobile)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 Alper Auto Top Co., 31 Willow St., Waterbury, Conn.
 Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.
 Atlanta Auto Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Auto Cape Top Co., 2334-38 S. Michigan Ave., Chicago, Ill.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Badger—See Wisconsin Auto Top Co.
 Bemco—See B. E. Mfg. Co.
 Bilas Auto Top Co., C. F., 1351 Court Pl., Denver, Colo.
 Buob & Schen, 500-10 Webster Ave., Cincinnati, O. (See page 953.)
 Campbell—See Perkins-Campbell Co.
 Casco—See Cincinnati Auto Specialty Co.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Auto Top Co.—See Frankel Specialties Corp.
 Chanslor & Lyon Top Co., 1208 S. Grand Ave., Los Angeles, Cal.
 Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Co-Zee—See Omaha Auto Top Co.
 Columbia Tire & Top Co., 922 Commonwealth Ave., Boston, Mass.
 Consolidated Auto Top Co., 4049-59 St. Clair Ave., Cleveland, O.
 Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (See page 983.)

Everything is listed under the NOUN or principal word



"NIGRUM"
IMREGNATED HARDWOOD
OIL-LESS BUSHINGS

When Lubrication Is Difficult

"NIGRUM" impregnated hardwood Oil-less Bushings serve a definite purpose for which no other type of bushing is so advantageously suited.

At certain bearing points, difficult of access, "Nigrum" Bushings alone will function smoothly and steadily in the face of continued neglect.

We also manufacture "Bound Brook" Graphite-and-Bronze Oil-less Bushings.

All Genuine Graphited Oil-less Bushings have always been made at Bound Brook, U. S. A.

Bound Brook Oil-less Bearing Co.

Specialists in the manufacture of Oil-less Bushings for more than a third of a century

BOUND BROOK NEW JERSEY
Detroit Office, 1723 Ford Building

Smith Fan Belts



Does the pulley side of the belt you use soon develop cuts and cracks and so break prematurely? All ordinary fabric belts do. If you wish to avoid this and find how good a really scientifically built fabric belt can be, order a trial lot of SMITH BELTS. The price is right too.

Woven endless fan belts for all cars.

Also Ford Transmission Lining, Anti-Squeak, Webbing and Tape.

Manning J. Smith Belting Co.

39 East Ashmead Street
Germantown Philadelphia



WHENEVER the questions of true value and excellence of fabric arise, Laidlaw Closed Car Upholstery Cloths, Carpets, Curtain Silks and Passementeries will supply the answer.

THE LAIDLAW COMPANY, Inc.

16 West 60th Street
Chicago

Cleveland

Detroit

New York City
St. Louis

Please mention The Automobile Trade Directory

COVERS, Slip (Continued)

Cov-O-Alls—See Gordon Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 Easy-On—See Gordon Co.
 Englander Co., 5940 Second St., W., Detroit, Mich.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Fittswell—See Niagara Fabric Mfg. Co.
 Frankel Specialties Corp., 354 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Geco—See Glover Equipment Co.
 General Top Co., 4310 St. Clair Ave., Cleveland, O. (See page 985.)
 Genesee Mfg. Co., 518-18 Harrison St., Flint, Mich.
 Glover Equipment Co., 413 N. Capitol Ave., Indianapolis, Ind. "Geco."
 Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On," "Jiffy," "Cov-O-Alls."
 Graessm Auto Co., 258 W. 69th St., New York, N. Y.
 Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
 Herrity Co., E. A., 60 Summer St., Stamford, Conn.
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Hyatt Auto Top Co., 310-20 Wood St., Trenton, N. J.
 Jiffy—See Gordon Co.
 Johnston Commercial Body Co., Fort Smith, Ark.
 Jones & Pimm Co., 423 W. Onondaga St., Syracuse, N. Y.
 Lamco—See Lehman Mfg. Co.
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Lehman Mfg. Co., 310 Fourth St., Canaan, Ind. "Lamco." (See page 143.)
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo. "Summa."
 McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Mobile Top Co., 26 Selden Ave., Detroit, Mich.
 Moore & Co., 647 W. 50th St., New York, N. Y. "Right Fit."
 Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Presto." (See page 313.)
 National Auto Top Co., 510 W. Broad St., Richmond, Va.
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fittswell."
 Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
 Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 313.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 Production Auto Top Co., 373 Fourth Ave., Long Island City, N. Y.
 R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.
 Right Fit—See Moore & Co.
 Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
 Steiner, Jos., 409 N. Seventh St., Manitowoc, Wis.
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y. "Wear-Well."
 Summa—See Lockwood Mfg. Co.
 Tatco—See Thomas Auto Top Co.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatoo."
 Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.
 Wear-Well—See Sterling Top & Equipment Co.
 Wilcox Co., M. I., Water St., Toledo, O.
 Williams Auto Top Works, C. T., 1107 Seventh St., Wichita Falls, Tex.
 Wisconsin Top Co., Racine Wis. "Badger." (See page 985.)

COVERS, Slip, for Fords

(See also Tops)

Accurate Cover Co., 373 Canal St., New York, N. Y.
 Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Badger—See Wisconsin Auto Top Co.
 Bemco—See B. E. Mfg. Co.
 Casco—See Cincinnati Auto Specialty Co.
 Cincinnati Auto Specialty Co., 313-14 Main St., Cincinnati, O. "Casco."
 Co-Zee—See Omaha Auto Top Co.
 Cov-O-Alls—See Gordon Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 Easy-On—See Gordon Co.
 Fittswell—See Niagara Fabric Mfg. Co.
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On," "Jiffy," "Cov-O-Alls."
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Jiffy—See Gordon Co.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo. "O-Su-Klene."
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.

Everything is listed under the NOUN or principal word

FINISHED OR SEMI-FINISHED

CRANKSHAFTS, CONNECTING RODS, SPINDLES,
ALL TYPES OF MACHINE KEYS

SEND US YOUR INQUIRIES

The William Leard Co., New Brighton, Pa.

CHAMPION BRASS WORKS COLDWATER, MICH.

Manufacturers of

Solid-Brass and Copper Rivets
Brass-Bronze and Aluminum Castings

SERVICE AND QUALITY ASSURED

Bumpers



Special tailor made, anti-rattle one piece

BUMPERS BOLT TO FRAME
without attachments

Dodge Brothers, Oakland, Buick and Studebaker cars.

Tow Cables on reel, Tire Locks.

THE BELLEVUE MFG. CO.

BELLEVUE, OHIO

EVERSAFE! KNOWN EVERYWHERE

EMERGENCY BRAKE FOR FORDS



Band Steel made in Types A and B. Type A is non-adjustable; Type B is adjustable for wear of lining or drums; by spring jaws of shoes to one side by placing washers on jaws of shoe and securing by bolt and nut. Once wheels are applied it is necessary to remove them to make adjustment.

Type A—Non-Adjustable	\$2.25
Type B—Adjustable	2.50
Type C—Unlined, Outside Adjustment.....	3.50
Type D—Lined, Outside Adjustment.....	5.00

Manufactured exclusively by NEVER BREAK PRODUCTS CO., Bangor, Pa.

LEE'S BALL BEARING AUTOMATIC CONTACT TIMER

Its Easy Starting Prolongs
Life of Battery.

Gives Power and Speed.

Saves 5 Gallons out of
every 100 on Gas.

No parts needed.

No waving of case.

No vibration.

No wear.

No stalling or shorting.

No jerking.

No missing.

50,000 Miles Guaranteed.

Price \$5.00.

Liberal discounts to Jobbers and Dealers.

Write for complete details.



Please mention The Automobile Trade Directory

COVERS, Slip, for Fords (Continued)

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Presto."
(See page 313.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

O-SO-Klene—See Lockwood Mfg. Co.

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Perkins-Campbell Co., Cincinnati, O.
(See page 115.)

Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O.
(See page 313.)

Powers Mfg. Co., Waterloo, Iowa.
(See page 581.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R. C. Fabric Co., 1833 Bedford Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
(See pages 125, 143, 307 and 983.)

Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind.

Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.

Whitehall Auto Top Co., 539 Whitehall St., Atlanta, Ga.

Wilcox Co., M. I., Water St., Toledo, O.

Wisconsin Top Co., Racine, Wis. "Badger."
(See page 985.)

COVERS, Spare Tire

(For covering spare tires and tubes; also for demountable rims or wheels)

A. P. Co.—See Atlantic-Pacific Mfg. Co.
Accurate Cover Co., 378 Canal St., New York, N. Y.

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 335.)

Anton-Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co."
(See page 303.)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. "Howard," "Chicago."
(See page 307.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Badger—See Wisconsin Auto Top Co.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Bemco—See B. E. Mfg. Co.

Betterall—See Prince Auto Fabric Mfg. Co.

Burlock & Co., Chas., Wausau, Wis.

Campbell—See Perkins-Campbell Co.

Casco—See Cincinnati Auto Specialty Co.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Champion Auto Top Co.—See Frankel Specialties Corp.

Chicago—See Atlas Specialty Mfg. Co.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Cleveland-Akron Bag Co., Cleveland, O.
(See page 97.)

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich.

Doerner & Co., 4127 32nd St., Cincinnati, O. "Paragon."

Duk-Bak—See Dafoe-Eustice Co.

Easy-On—See Gordon Co.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Edelstone Fabric Co., Wm. W., 51 Char-don St., Cambridge, Mass. "Wedco."
(See page 567.)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Esco—See Economy Seat Co.

Fitwell—See Bailey & Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Frankel Specialties Corp., 856 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."

Goss, J. C., 36 Woodbridge St., E., Detroit, Mich.

H. B.—See Hopewell Bros.

Hopewell Bros., Watertown, Mass. "H. B.," "Tirex," "Security."
(See page 641.)

Howard—See Atlas Specialty Mfg. Co.

Keystone—See Nathan Novelty Mfg. Co.

Landers Bros. Co., Dept A2, Toledo, O.
(See page 1049.)

Lockwood Mfg. Co., Kansas City, Mo.

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. "Keystone," "Presto."
(See page 313.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. "Co-Zee."

Paragon—See Doerner & Co.

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Powers Mfg. Co., Waterloo, Ia.
(See page 581.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Presto—See Nathan Novelty Mfg. Co.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y. "Betterall."

Protex-a-Tire—See Stephens Rubber Co.

R. C. Fabric Co., 1833 Bedford Ave., Brooklyn, N. Y.

Security—See Hopewell Bros.

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Protex-a-Tire."

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."

Tirex—See Hopewell Bros.

Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.

Wedco—See Edelstone Fabric Co.

Wisconsin Top Co., Racine, Wis.
(See page 985.)

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 307.)

Everything is listed under the NOUN or principal word

Radiator Covers
 Seat Linings
 Top Recovers
 Back Curtains
 Side Curtains
 Pocketed Door Pads

Special money making proposition on all above items on Ford Sizes. Get quotations.

The Phoenix Carriage Co.
 Evans, South and Woodrow Sts.
 CINCINNATI OHIO

BEMCO BRAND

SEAT COVERS

None Better

TIRE COVERS

For Every Make of Tire

TOP HOOD COVERS FORD SPECIALTIES
 TOOL ROLLS RADIATOR COVERS
 HOOD COVERS Etc., Etc.

Send for Descriptive Matter

B. E. MANUFACTURING CO.
 210 13th Street Long Island City

"ROSCO"

Automotive Products

A Few of Our Numbers:



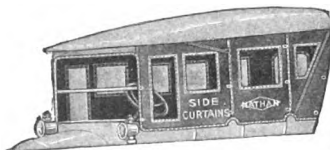
Dome Lights
 Windshield Mirrors
 Fender Mirrors
 Ash Receivers
 Flower Vases
 Trouble Lights
 Dash Lamps
 Tail Lamps
 Parking Lamps
 Bullet Side Lamps
 Sockets, Connectors,
 Switches, etc., etc.

Send for complete catalog No. 20

A. W. ROSEN & CO.
 Manufacturers
 610-612-614 Broadway, New York City

NATHAN

TOP "RECOVERS" AND SIDE CURTAINS



RAIN HOODS

TIRE COVERS



GET OUR PRICES

NATHAN NOVELTY MFG. CO.
 55 FIFTH AVE., NEW YORK CITY
 Write for Complete CATALOG

Please mention The Automobile Trade Directory

COVERS, Spare Tire, for Fords

(For covering spare tires and tubes; also for demountable rims or wheels)

- A. P. Co.—See Atlantic-Pacific Mfg. Co.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 335.)
 Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
 Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 303.)
 Atlas Specialty Mfg. Co., 16-20 E. 24th St., Chicago, Ill. "Easy," "Howard." (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Casco—See Cincinnati Auto Specialty Co.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
 Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (See page 983.)
 Crawford Mfg. Co., 311 N. Foushee St., Richmond, Va.
 Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
 Easy-On—See Gordon Co.
 Easy—See Atlas Specialty Mfg. Co.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Howard—See Atlas Specialty Mfg. Co.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Paragon—See Doerner & Co.
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See page 125, 143, 307 and 983.)

COVERS, SPARE WHEEL—See Covers, Spare Tire**COVERS, SPRING—See Cups, Spring Leaf Lubricating****COVERS, STARTING CRANK—See Holders, Starting Crank****COVERS, STEERING KNUCKLE—See Boots, Steering Knuckle****COVERS, Steering Wheel Rim**

Leather, Rubber or Fabric Covers to lace or button on steering wheel rim to improve the grip

- Alpha—See Parker, Stearns & Co.
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 307.)

COVERS, TIRE—See Covers, Spare Tire**COVERS, Top**

(See also Tops, Automobiles)

- A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 983.)
 Burlock & Co., Chas., Wausau, Wis.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cleveland-Akron Bag Co., Cleveland, O. (See page 97.)
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Co-Zee—See Omaha Auto Top Co.
 Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-Tec-Shun."
 Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Fitzwell—See Niagara Fabric Mfg. Co.
 Geco—See Glover Equipment Co.
 Glover Equipment Co., 413 N. Capitol Ave., Indianapolis, Ind. "Geco."
 Lockwood Mfg. Co., Kansas City, Mo.
 Myar Mfg. Co., 124 E. Fourth St., Little Rock, Ark.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Omaha Auto Top Co., 709-11 E. 15th St., Omaha, Neb. "Co-Zee."
 Paragon—See Doerner & Co.
 Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 313.)
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 Pro-Tec-Shun—See Detroit Slip Cover Co.
 Standard Auto Top & Body Co., 1338 Race St., Philadelphia, Pa.
 Universal Trimming Co., 3425 Michigan Ave., Chicago, Ill.

COVERS, Top, for Fords

(See also Tops, Automobiles)

- Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 983.)
 Donlin Auto Co., C. A., Hopkins, Mo.
 Easy-On—See Gordon Co.
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."
 Hodas-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Everything is listed under the NOUN or principal word

WITHERBEE STORAGE BATTERIES

Built Right Since 1903

There is some Witherbee territory still open to progressive distributors. If you would associate yourself with a eighteen-year-old success, backed by live co-operation and liberal discounts—write immediately.

Write for Replacement Bulletin



Witherbee Batteries are not assembled but are made entirely in this plant.

Trade



Mark

WITHERBEE STORAGE BATTERY CO.,
INC.

643-55 West 43rd St.

New York City



- "Superbestos" Folded and Stitched Brake Lining.
- "Superbestos" Wire Inserted Compressed Brake Lining.
- "Superbestos" Wire Inserted Woven Brake Lining.
- "Superbestos" Folded and Stitched Clutch Facings.
- "Superbestos" Moulded Clutch Facings.
- "Holdwell" Ford Transmission Lining, Treated or Untreated.
- "Rattleproof" Ford Transmission Lining, Treated or Untreated.
- "Pylox" Waterproof Automotive Covers.
- "Milbroco" Spark Plug Yarn.
- "Ronuk" Asbestos Metallic Red and Black Sheet Packing.
- "Wabash" Twisted Valve Stem Packing.
- "Wabash" Corrugated Running Board Mats.

Jobbers and Dealers—Write

MIKESELL BROTHERS COMPANY
Manufacturers Automotive Products

156 North La Salle Street

CHICAGO, ILL.

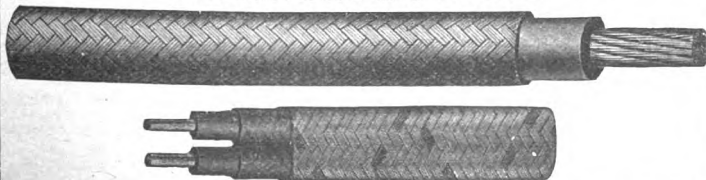
Plant and Works: Wabash, Indiana



BISHOP IGNITION

Lighting Starting CABLES

Samples and Prices sent only to Automobile
Manufacturers and Jobbers



BISHOP GUTTA-PERCHA CO. 420 E. 25th ST.
NEW YORK

Please mention The Automobile Trade Directory

COVERS, Top, for Fords (Cont'd)

- Lockwood Mfg. Co., Kansas City, Mo.
 Nathan Novelty Mfg. Co., 55 Fifth Ave.,
 New York, N. Y. (See page 313.)
 Niagara Fabric Mfg. Co., 47 Greene St., New
 York, N. Y. "Fitzwell."
 Phoenix Carriage Co., Evans, South &
 Woodrow Sts., Cincinnati, O.
 (See page 313.)
 Premier Auto Novelty Mfg. Co., 375 W. Broad-
 way, New York, N. Y.
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louis-
 ville, Ky. "R-E."
 (See pages 125, 143, 307 and 983.)
 Stephens Rubber Co., A. J., 1427 Chestnut St.,
 Kansas City, Mo.
 Sure-Fit—See Hodess-Zink Mfg. Co.

**COVERS, UNIVERSAL JOINT—See Boots,
Steering Knuckle****COVERS, UPHOLSTERY—See Covers,
Sls****COVERS, WHEEL—See Covers, Steering
Wheel Rim; also Covers, Spare Tire****COWL BOARDS FOR FORDS—See Cowl,
Dash****COWL LIGHT REFLECTING MIRRORS—
See Mirrors; Cowl Light Reflecting****COWLS, Dash and Cowl Boards, for
Fords**

- Aake Moore Corp., 19 Lake Ave. N., Duluth,
 Minn.
 Builders Mfg. Co., 828-30 N. Wells St., Chi-
 cago, Ill.
 Edelmann & Co., E., 2638 N. Crawford Ave.,
 Chicago, Ill.
 Ero Mfg. Co., 753-55 W. Jackson Blvd.,
 Chicago, Ill. (See page 843.)
 Johns-Manville Co., H. W., Madison Ave. &
 41st St., New York, N. Y.
 Louisville Veneer Mills, 1100-40 Fulton St.,
 Louisville, Ky.
 Motor Products Corporation, 11803 Mack
 Ave., Detroit, Mich. (See page 843.)
 Stewart-Warner Speedometer Corp., Chi-
 cago, Ill. (See page 1063.)
 W-A—See Whetstone & Co.
 Warnerlite Products Corp., Davenport, Iowa.
 Whetstone & Co., John H., Court St., Lapeer,
 Mich. "W-A."

CRADLES, Portable Steel

(Steel Cradle or Holder upon which car is fastened
 and so constructed that car can be turned over to
 facilitate making repairs.)

- Morrison Corp., Apollo Bldg., Pittsburgh, Pa.
 Turn-Auto Corp., 149 Broadway, New York,
 N. Y.

CRADLES, Radiator, for Fords

(Stamped steel plate or support to carry weight of
 radiator and prevent side lugs from being damaged)

- Brocksmith Mfg. Co., 1856-60 Menard St., St.
 Louis, Mo.
 Dependable—See Gahm-McCormick Co.
 Gahm-McCormick Co., 806 E. Main St.,
 Streator, Ill. "Dependable."
 (See page 249.)
 Kees Mfg. Co., F. D., 24 High St., Beatrice,
 Neb.
 Mazura Mfg. Co., 412-14 S. Sixth St., St.
 Louis, Mo.

**CRANES, DRAGS AND JACKS,
Truck Wheel Removing**

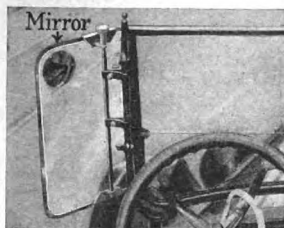
- Frayser-Miller Co., Bank of Commerce Bldg.,
 Columbus, O.
 Thomson Auto Specialties Co., 80-90 W.
 Spring St., Columbus, O.

CRANES, Portable

(For Chain Blocks or Hoists; See Blocks or Chains,
 Hoist)

- Acme—See Moore Co.
 Alben Co., 27th Ave. & Wahl St., Milwaukee,
 Wis. "Giant."
 Beatty Machine & Mfg. Co., Hammond, Ind.
 "Hammond."
 Boston & Lockport Block Co., 134 Conder St.
 (E. Boston), Boston, Mass.
 Bradney Machine Co., Middletown, N. Y.
 (See page 317.)
 Brown Hoisting Machinery Co., 4403 St. Clair
 Ave., Cleveland, O. "Brownhoist."
 Brownhoist—See Brown Hoisting Machinery
 Co.
 Browning & Co., Victor R., 17701 Lake Shore
 Blvd., Cleveland, O.
 Cameron Engineering Co., Washington, N. J.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Canton Foundry & Machine Co., Third St. &
 Savannah Ave., S. E., Canton, O.
 Channon Mfg. Co., James H., 223-33 W. Erie
 St., Chicago, Ill.
 Cleveland Chain & Mfg. Co., Cleveland, O.
 Champion—See Milton & Son.
 E. & S.—See J. B. S. Mfg. Co.
 Giant—See Alben Co.
 Hammond—See Beatty Machine & Mfg. Co.
 Hercules—See Soper, Geo. E.
 Hillite—See Manley Mfg. Co.
 Holmes Co., Ernest, Chattanooga, Tenn.
 Imperial—See Ingersoll-Rand Co.
 Imperial—See Moore Co.
 Ingersoll-Rand Co., 11 Broadway, New York,
 N. Y. "Imperial."
 J. B. S. Mfg. Co., Merchants National Bank
 Bldg., Elmira, N. Y. "E. & S."
 Keystone Garage Equipment Co., 201 Devon-
 shire St., Boston, Mass.
 Klemme Mfg. Co., A. C., Davenport, Iowa.
 Lafayette Engineering Co., 208 S. Fourth St.,
 Lafayette, Ind.
 Lane Bros. Co., 43 Prospect St., Poughkeepsie,
 N. Y.
 Manley Mfg. Co., York Pa. "Hillite."
 (See page 317.)
 Miller—See Portable Tool Supply Co.
 Milton & Son, S. G., 1104 Elk St., Franklin,
 Pa. "Champion."
 Moore Co., Franklin, Winsted, Conn. "Acme,"
 "Imperial."

Everything is listed under the NOUN or principal word



Good profit and advertising support.
Write or wire for full details of our
Distributors' proposition.

BENZER REAR VIEW WINDEFLECTORS

THEY SELL ON SIGHT

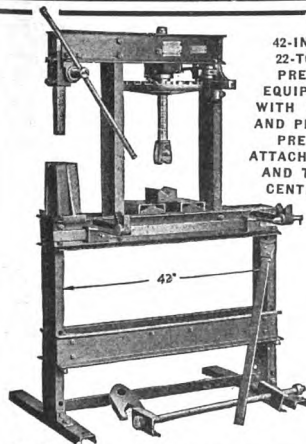
Get the exclusive Sales Agency for Benzer Rear View Windeflectors—the only wind deflectors made with rear view mirrors ground into the glass. Large stock not needed to secure exclusive agency. Benzer "Windeflectors" sell on sight and net big profits.

BENZER LENS

Legal in Every State

Provides a GLARELESS HEADLIGHT. Shows up every road irregularity, clear and distinct. Gives a magnified side projection, revealing dangerous ditches and ruts. The SAFEST Lens made. Passed highest in candle power tests in every state.

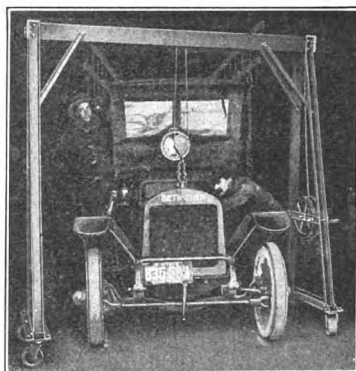
The BENZER CORPORATION
Myrtle, Cooper and Webster Aves., Brooklyn, N.Y.



42-INCH
22-TON
PRESS
EQUIPPED
WITH RACK
AND PINION
PRESS
ATTACHMENT
AND TEST
CENTERS

This High Speed Rack and Pinion Press may be had on any Manley Press. For light work, bushing, pins, etc., it is invaluable. Capacity—Takes work up to 20 in. in diameter. Leverage—44 to 1. One man can exert 3½ to 5 tons pressure. TEST CENTERS shown above can be had as an attachment on any Manley Press. Indispensable for straightening work. Provided with 2—60 degree centers, one fixed, other adjustable. Takes work 20 in. in diameter and up to 42 in. length between centers and any length on V-Blocks, which are furnished because most automobile work has no center holes.

MANLEY MFG. CO., York, Pa.
PORTABLE FLOOR CRANES, ENGINE STANDS,
WRECKING CRANES, WORK BENCHES,
OIL SERVICES.



Built with one or two ball-bearing trolleys, and in any height or length desired. For removing bodies from automobiles or motor trucks, serving machine tools and transporting heavy material, they have no equal. Casters are ball and roller bearing. We supply lifting skids and sling chains to order.

Ask for descriptive circular and prices

Bradney Machine Co., Inc.

Middletown

New York

Ignition Cable Starting Cable

Lighting Cable

Our cables are used on many of the leading makes of Automobiles

BOSTON INSULATED WIRE & CABLE CO.

Branch Office:
268 E. Jefferson Avenue
Detroit, Michigan

BOSTON, MASS.

Canadian Factory:
Boston Insulated Wire
& Cable Co., Ltd.
Hamilton, Ontario

Please mention The Automobile Trade Directory

CRANES, Portable (Continued)

New Jersey Foundry & Machine Co., 90 West St., New York, N. Y.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Portable Tool Supply Co., 256 Main St., Buffalo, N. Y. "Miller."
 Pull-U-Out Products Co., 1627 Locust St., St. Louis, Mo.
 Richards-Wilcox Mfg. Co., Third St. & C., B. & Q. R. R. tracks, Aurora, Ill.
 Soper, Geo. E., 154 E. Water St., Kankakee, Ill. "Hercules."
 Spidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.
 Toepper's Sons, Frank, 45 National Ave., Milwaukee, Wis.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)
 Western Mfg. Co., Sixth Ave. E. & S. Third St., Oskaloosa, Iowa.
 Weston—See Union Elevator & Machine Co.

CRANES, Truck

(For applying to trucks to facilitate loading;
 For Truck Winches—See Winches, Truck)

Hendrickson Truck Crane Co., Peoples Gas Bldg., Chicago, Ill.

CRANK CASE BOLTS FOR FORDS—See Bolts, Special

CRANK CASE BREATHERS FOR FORDS—See Breathers, Crank Case

CRANK CASE SUPPORTS—See Brackets or Supports, Engine Repair for Fords

CRANK HANDLES—See Handles, Starting Crank

CRANK HOLDERS—See Holders, Starting Crank

CRANK LOCKS FOR FORDS—See Locks, Starting Crank

CRANK PIN GRINDERS—See Grinders, Crank Pin

CRANK PIN LATHES—See Lathes, Crank Pin

CRANK PIN TRUING TOOLS—See Tools, Crank Pin Truing

CRANK RATCHET PINS FOR FORDS—See Pins, Crank Ratchet

CRANK RELEASES FOR FORDS—See Cranks, Safety Starting

CRANK SHAFT BUSHINGS FOR FORDS—See Bushings, Bronze

CRANK SHAFT COUNTERBALANCES FOR FORDS—See Counterbalances, Crankshaft

CRANK SHAFT GRINDING TOOLS—See Tools, Crank Pin Truing

CRANK SHAFT TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

CRANK SHAFTS—See Crankshafts, Finished and Machined

CRANKS, Safety Starting

(To prevent bodily injury from back blows)

Oulton Mfg. Co., 144 Liverpool St. (E. Boston), Boston, Mass.
 Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.
 Whitcomb Machine Co., Monroe, Wis.

CRANKS, Safety Starting, for Fords

(To prevent bodily injury from back blows)

Atlata Specialty Mfg. Co., 2941-43 Locust St., St. Louis, Mo.
 Automotive Exchange of America, Hippodrome Annex, Cleveland, O. (Sole Distributors for Palmer Auto Parts Co., Wooster, O. "Ketch-A-Kick.")
 Bear—See Robinson, E.
 Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
 Carson Mfg. Co., 9 S. Eighth St., Richmond.
 Ketch-A-Kick—See Automotive Exchange of America Co.
 Lawco Kantkick—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco Kantkick." (See page 125.)
 Miller Mfg. Co., E. L., 23 W. Third St., Kansas City, Mo. "Non-kick."
 Non-Kick—See Miller Mfg. Co.
 Palmer Auto Parts Co.—See Automotive Exchange of America Co.
 Robinson, E., 2674 Atlantic Ave., Brooklyn, N. Y. "Bear."
 Shipley & Co., Rochester, Ind.
 Whitcomb Machine Co., Monroe, Wis.

CRANKSHAFTS, Finished or Machined

(For Crankshafts in the rough—See Forgings, Drop)

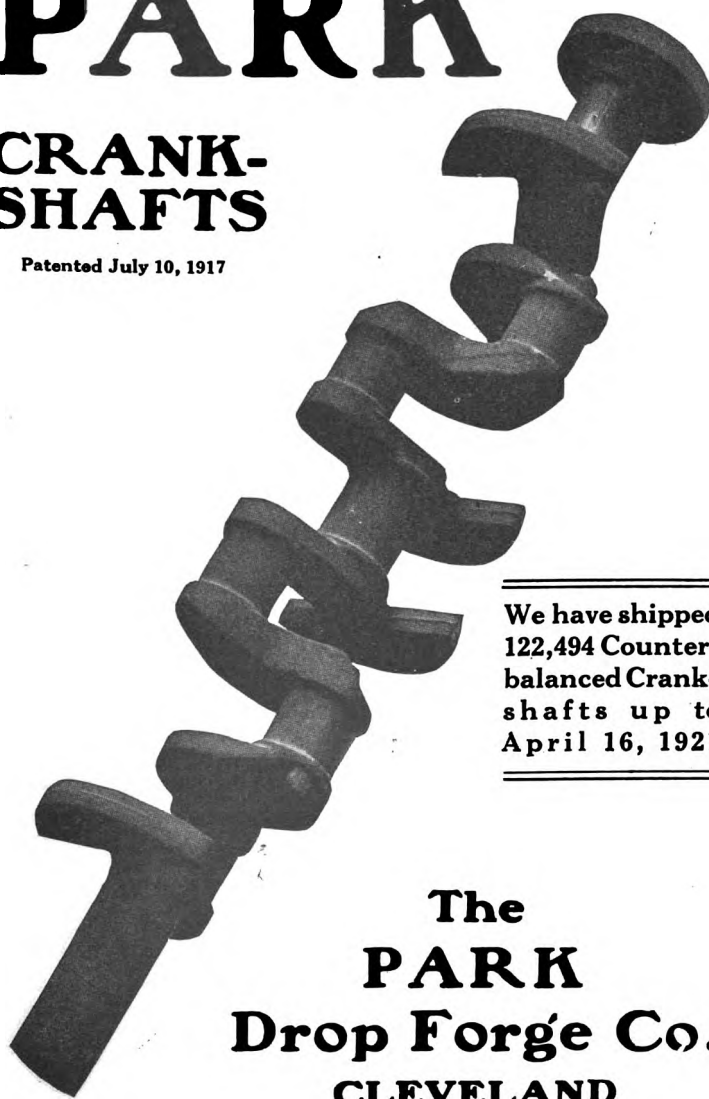
Atlas Mfg. Co., County Line St. & Court Pl., Fostoria, O.
 Automobile Crankshaft Corp., Detroit, Mich. (See page 499.)
 Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
 Jackson Motor Shaft Co., Jackson, Mich. (See page 183.)
 Jefferson Forge Products Co., Detroit, Mich. (See page 523.)
 Ladish Drop Forge Co., Cudahy, Wis. (See page 537.)
 Leard Co., Wm., New Brighton, Pa. (See page 311.)
 Michigan Crank Shaft Co., Lansing, Mich.
 Moltrup Steel Products Co., Beaver Falls, Pa. (See page 909.)
 Park Drop Forge Co., Cleveland, O. (See page 319.)
 Standard Gauge Steel Co., Beaver Falls, Pa.
 Sundberg Co., 1024 W. Kinzie St., Chicago, Ill.
 Tindell-Morris Co., Eddystone, Pa.
 Union Drop Forge Co., 358 W. Grand Ave., Chicago, Ill.
 Union Switch & Signal Co., Swissvale, Pa.

Everything is listed under the NOUN or principal word

COUNTERBALANCED PARK

CRANK- SHAFTS

Patented July 10, 1917



We have shipped
122,494 Counter-
balanced Crank-
shafts up to
April 16, 1921

The
PARK
Drop Forge Co.
CLEVELAND

Please mention The Automobile Trade Directory

CREEPERS OR REPAIR TRUCKS—See Trucks, Repair

CRIMPING MACHINES—See Machines, Crimping

CROWN FENDERS FOR FORDS—See Guards, Mud

CRUCIBLES, Metal Melting

Bartley Crucible Co., Jonathan, Oxford St., Trenton, N. J.
 Bay State Crucible Co., Taunton, Mass.
 Dixon Crucible Co., Joseph, Jersey City, N. J.
 Gautier & Co., J. H., Green & Essex Sts., Jersey City, N. J.
 McCullough-Daisell Crucible Co., Pittsburgh, Pa.
 Ross-Tacony Crucible Co. (Tacony), Philadelphia, Pa.
 Seidel, R. B., 1222-24 Callowhill St., Philadelphia, Pa.
 Taunton Crucible Co., Taunton, Mass.
 Taylor, Robert J., 1900 Callowhill St., Philadelphia, Pa.

CRUDE OIL MOTORS—See Engines, Motor Boat, Kerosene

CRUDE OIL ENGINES—See Engines, Motor Boat, Kerosene

CUFF PROTECTORS—See Protectors, Sleeve

CUP CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

CUP GREASES—See Greases, Cup

CUP WRENCHES—See Wrenches, Grease Cup

CUPS, CHASSIS LUBRICATING—See Systems, Chassis Lubricating

CUPS AND CONES, Ball

(See also Machine Work; also Screw Machine Products)

Ashley Machine Works, 724 University Ave., Rochester, N. Y.
 B-N—See Burgess-Norton Mfg. Co.
 Bossert Corp., Utica, N. Y. (See page 887.)
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Crosby Co., Buffalo, N. Y. (See page 893.)
 Frauhm, Chas. N., 188 N. Colony St., Wallingford, Conn.
 Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
 Onakes Co., Indianapolis, Ind. (See page 397.)
 Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Western Automatic Machine Screw Co., Elyria, O.

Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)
 Worcester Stamped Metals Co., Worcester, Mass. (See page 1051.)

CUPS, CYLINDER LUBRICATING—See Lubricators, Cup Cylinder

CUPS, GREASE—See Cups, Oil and Grease

CUPS, Oil and Grease

Airspring—See Hunter Pressed Steel Co.
 Ajax—See City Iron Works & Machine Co.
 Albany—See Cook's Sons, Adam.
 American Injector Co., 1469 14th Ave., Detroit, Mich. "Star." "Surlock."
 American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
 American Stamping Co., 81 Burchard St., Battle Creek, Mich. "Klicket."
 Ansonia Mfg. Co., Ansonia, Conn.
 Arrow—See Long Bros.
 Atlas—See Lunkenheimer Co.
 Autoware Corp., 441 State St., Detroit, Mich. "Dann."
 Bailey Co., W. J., Newark, N. J. "Climax."
 Bassick Co., Bridgeport, Conn. (See page 323.)
 Bay State Stamping Co., 380 Chandler St., Worcester, Mass. "Handy."
 Bloom Flusher Co.—See Monson, Chas. S.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)
 Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
 Bowen Products Corp., 983 17th Ave., S. E., Minneapolis, Minn. "Stahl."
 Bridgeport—See Garrison Co.
 Camden—See Lindholm Metal Stamping Co.
 Carde Stamping & Tool Co., West Side, Saginaw, Mich.
 Cardinol—See Lunkenheimer Co.
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. "Oil-O-Matic." (See page 427.)
 Chicago—See Ohio Injector Co.
 City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa. "Ajax." "Lars-Hex."
 Climax—See Bailey Co.
 Coe-Stapley Mfg. Corp., West Haven, Conn. "Lubrick." (See page 539.)
 Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."
 Dann—See Autoware Corp.
 Dawson Mfg. Co., 2012 Larrabee St., Chicago, Ill. (See page 323.)
 Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
 Edelmänn & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Empress—See Bowen Products Corp.
 Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
 Felix Mfg. Co., 4437 N. Clark St., Chicago, Ill.
 Forc—See International Sales Corp.
 Garrison Co., 215 River St., Bridgeport, Conn. "Bridgeport."
 Gem—See Lunkenheimer Co.
 Gits Bros. Mfg. Co., 1940 Kilbourne Ave., Chicago, Ill.
 Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
 Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Everything is listed under the NOUN or principal word

Empress Grease and Oil Cups

As Standard Factory Equipment Dominate the
Motor Car, Motor Truck and Tractor Industries



**Empress No. 53
Style N
Oil Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



No.	Stock Thread	Optional Thread	Dia. of Cap
1	3/8"-32V	.....	3/8"
2	1/2"-32V	.....	1/2"
3	3/4"-24V	1/2"	3/4"
4	1"-24V	3/8"	1"



**Empress No. 116
Hinge Lid Elbow
Oil Cups**

Made from Steel

Dimensions, Threads, etc.



Number		4	5	6
Outside Diameter of Body.....	in.	3/8	3/4	7/8
Regular Pipe Thread.....	in.	3/8	3/4	7/8



**Empress No. 200
Plain Compression
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2	3
Inside Diam.	in.	3/4	1	1 1/4	1 1/2	2	2 1/4
Reg. Pipe Th'd	in.	3/4	1	1 1/4	1 1/2	2	2 1/4
Cap. (Grease)	oz.	3/4	1	1 1/4	1 1/2	2	2 1/4
Opt. Thread.	in.	Pipe 3/4	Pipe 1	Pipe 1 1/4	Pipe 1 1/2	Pipe 2	Pipe 2 1/4



**Empress No. 207
Leather Packed
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2
Inside Diameter.....	in.	3/4	1	1 1/4	1 1/2	2
Reg. Pipe Thread.....	in.	3/4	1	1 1/4	1 1/2	2
Cap. (Grease).....	oz.	3/4	1	1 1/4	1 1/2	2
Optional Thread.....	in.	1/4-32	1/2-32	Pipe	Pipe	Pipe



**Empress No. 5739
Reservoir Type
Oil Cups**

Made from Steel

Dimensions, Threads, etc.



Number		000	00
Height over all.....	in.	2	2 1/4
Diameter of Cap.....	in.	1	1 1/4
Diameter of Box.....	in.	1 1/8	1 3/8
Regular Pipe Thread.....	in.	3/8	1/2



**Empress No. 249
Ratchet
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2
Inside Diameter.....	in.	3/4	1	1 1/4	1 1/2	2
Reg. Pipe Thread.....	in.	3/4	1	1 1/4	1 1/2	2
Capacity (Grease).....	oz.	3/4	1	1 1/4	1 1/2	2
Opt. Pipe Thread.....	in.	1/4-32	1/2-32	Pipe	Pipe	Pipe
Opt. Fem. Thread.....	in.	.....	3/8	1/2	3/4	1

Prices Upon Application

Bowen Products Corporation

Manufacturing and Sales Divisions

AUBURN DIVISION, AUBURN, N. Y.

WINKLEY DIVISION, DETROIT, MICH.

CLEVELAND DIVISION, CLEVELAND, OHIO

MINNEAPOLIS DIVISION, MINNEAPOLIS, MINN.

General Catalog P Shows
Over Fifty Other Styles



Branch Sales Offices

NEW YORK, 220 BROADWAY

CHICAGO, 1607 OTIS BUILDING

BOSTON, 903 DEXTER BUILDING

CINCINNATI, 409 LYRIC BUILDING

SAN FRANCISCO, MONADOCK BUILDING

Write Today for
Catalog P

Please mention The Automobile Trade Directory

CUPS, Oil and Grease (Continued)

Greist Mfg. Co., New Haven, Conn. "No-recn." (See page 323.)
 Hackett & Doolittle—See International Sales Corp.
 Handy—See Bay State Stamping Co.
 Hunter Pressed Steel Co., Pierce & Linden Sts., Lansdale, Pa. "Airspring."
 Ideal—See Lunkenheimer Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 International Sales Corp., 311 Fairfield Ave., Bridgeport, Conn. (Sole Distributors for Hackett & Doolittle, South Norwalk, Conn. "Fore.")
 Jewel—See Lunkenheimer Co.
 Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
 K. M. Mfg. Co., Factories Bldg., Toledo, O.
 Kelly & Jones Co., Greensburg, Pa.
 Larg-Hex—See City Iron Works & Machine Co.
 Lewis Searing Co. of Michigan, 287 Woodard Ave., Detroit, Mich.
 Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J. "Vale," "Camden," "Madeira," "McKee," "Simplex," "Reno."
 Lion—See Lunkenheimer Co.
 Little Wonder—See Tioga Mfg. Co.
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Arrow."
 Lubrik—See Coe-Stapley Mfg. Co.
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Ideal," "Lion," "Pioneer," "Royal," "Sentinel," "Tiger," "Gem," "Cardinal," "Mite," "Majestic," "Jewel," "Owl," "Atlas," "Reliance," "Primo," "Wingo," "Securo," "Surety."
 M & E—See Merchant & Evans Co.
 McKee—See Lindholm Metal Stamping Co.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Madeira—See Lindholm Metal Stamping Co.
 Madison-Kipp Co., 2327 Waubesa St., Madison, Wis.
 Majestic—See Lunkenheimer Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."
 Michigan Lubricator Co., Detroit, Mich. (See page 205.)
 Milwaukee Valve Co., 139 Burrell St., Milwaukee, Wis.
 Mite—See Lunkenheimer Co.
 Monitor Lubricating Co., 1213 Chestnut St., Philadelphia, Pa.
 Monson, Chas. S., Dime Bank Bldg., Detroit, Mich. (Sole Distributor for Bloom Flusher Co., Timb. O.)
 National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
 Newcup—See Newton Mfg. Co.
 Newton Mfg. Co., Church St., Plainville, Conn. "Newcup."
 Noroca—See Greist Mfg. Co.
 Ohio Injector Co., Wadsworth, O. "Chicago."
 Oil-O-Matic—See Champion Mfg. Co.
 Owl—See Lunkenheimer Co.
 Penberthy Injector Co., Detroit, Mich. "Siren," "Samson," "Senator," "Saturn." (See page 501.)
 Penn Pressed Metal Co., Newton Ave. & Line St., Camden, N. J. "Simplex."
 Pioneer—See Lunkenheimer Co.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Primo—See Lunkenheimer Co.
 Reliance—See Lunkenheimer Co.
 Reno—See Lindholm Metal Stamping Co.

Rich Mfg. Co., 370 Atlantic Ave., Boston, Mass.
 Richardson-Phenix Co., 122-25 Reservoir Ave., Milwaukee, Wis.
 Royal—See Lunkenheimer Co.
 Samson—See Penberthy Injector Co.
 Saturn—See Penberthy Injector Co.
 Securo—See Lunkenheimer Co.
 Senator—See Penberthy Injector Co.
 Sentinel—See Lunkenheimer Co.
 Simplex—See Lindholm Metal Stamping Co.
 Simplex—See Penn Pressed Metal Co.
 Siren—See Penberthy Injector Co.
 Stahl—See Bowen Products Corp.
 Star—See American Injector Co.
 Surety—See Lunkenheimer Co.
 Surlock—See American Injector Co.
 Tiger—See Lunkenheimer Co.
 Tioga Mfg. Co., 3209 N. 12th St., Philadelphia, Pa. "Little Wonder."
 Tucker, W. H. & C. F., Hartford, Conn. (See page 305.)
 Vale—See Lindholm Metal Stamping Co.
 Vibra Automatic Oil Cup Co., 1426 Vine St., Philadelphia, Pa.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Whitaker Mfg. Co., Chicago, Ill. (See page 1076.)
 Wilkinson Co., Wm. H., Main St., West Medway, Mass.
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.
 Wingo—See Lunkenheimer Co.

CUPS, Oil and Grease, for Fords

Albany—See Cook's Sons, Adam.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 321.)
 Cincinnati Screw Co., Twilight, O. (See page 945.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Empress—See Bowen Products Corp.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 M. & E.—See Merchant & Evans Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Tucker, W. H. & C. F., Hartford, Conn. (See page 305.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

CUPS, ORDINARY PRIMING—See Cocks, Standard Pet**CUPS, SPEEDOMETER SHAFT LUBRICATING—See Lubricators, Speedometer Shaft****CUPS, Spring Key and Special Priming**

(For ordinary priming cups—See Cocks, Standard Pet)
 Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
 Amalgamated Brass Co., Blanchester, O.
 American Brass & Iron Co., Detroit, Mich. (See page 205.)
 American Injector Co., 1469 14th Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word

The Self-Aligning Grease Cup

You Cannot Cross the Threads
or
Lose the Tops

Self-
Aligning



Self-
Locking

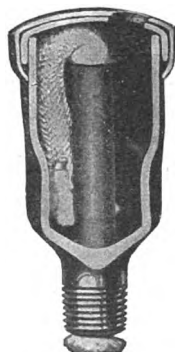
Easy to Operate
Always in Working Order

Dawson Mfg. Company

2012 Larrabee Street
CHICAGO, ILL.

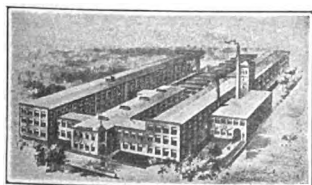
GREASE AND OIL ≡ CUPS ≡

Automobile Hardware



THE BASSICK COMPANY

BRIDGEPORT, CONN.



GREIST QUALITY SERVICE

IN THE MANUFACTURE OF ACCURATE MECHANICAL
SPECIALTIES AND ACCESSORIES IT IS UNEXCELLED

TELL US YOUR PROBLEM

A MODERN PLANT AND A SKILLED ORGANIZATION
IS AT YOUR SERVICE

The world's largest
manufacturers of
Sewing Machine
Attachments

The Greist Manufacturing Co.

NEW HAVEN, CONN.

Automobile
Accessories
and Contract
Manufacturing

Please mention The Automobile Trade Directory

CUPS, Spring Key and Special Priming (Continued)

American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
 Becco—See Michigan Motor Specialties Co.
 Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
 Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.
 Buckeye Iron & Brass Works, 224 E. Third St., Dayton, O.
 Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
 Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
 Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
 Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Greist Mfg. Co., New Haven, Conn. (See page 323.)
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Hepburn—See Victor Brass Mfg. Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Kant-Klog—See Taylor Machine Co.
 King, W. C., 911 Sargent St., Litchfield, Ill.
 Lincoln Brass Works, Detroit, Mich. (See page 263.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Michigan Lubricator Co., Detroit, Mich. (See page 263.)
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 National Brass Mfg. Co., 191-98 Mill St., Rochester, N. Y.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Standard Brass Works, 2931 Wight St., Detroit, Mich.
 Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.
 Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O. "Kant-Klog."
 Victor Brass Mfg. Co., 6818 Wade Park Ave., Cleveland, O. "Hepburn."

CUPS AND COVERS, Spring Leaf Lubricating

(Oil cups or boxes, felt oilers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks; for Spring Lubricating Strips—See Strips, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating.)

Anderson Spring Lubricator Co., 41-43 Day St., West Somerville, Mass.
 Babbitt Spring Oiler Co., 11223 Superior Ave., Cleveland, O.
 Bailey Co., W. J., Newark, N. J.
 Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Rello."
 Buxton & Owen, 30 N. La Salle St., Chicago, Ill. "Dilso."
 Dilso—See Buxton & Owen.
 Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "Sure-On."
 Federal Co.—See Van Spring Oiler Co.

Federal Stamping Co., Holland, Mich.
 G. L. W. Spring Oiler Co., Savoy Theater Bldg., San Diego, Cal. (See page 325.)
 Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.
 Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 573.)
 Hopewell Bros., Watertown, Mass. (See page 641.)
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 429.)
 Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 981.)
 K-K-K—See Killen Chemical Co.
 Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K."
 Lazarus Mfg. Co., 224 High St., Cleveland, O.
 Lasco—See Lazarus Mfg. Co.
 Rello—See Brown Spring Oiler Co.
 Renfro, John F., 1834 Broadway, New York, N. Y.
 Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O.
 Sure-On—See Dunn Mfg. Co.
 Van Spring Oiler Co., 222 N. Wabash Ave., Chicago, Ill. (Sole Distributors for Federal Co., South Haven, Mich.)
 Woodworth Mfg. Co., 1-29 Starr Ave., Birmingham, N. Y.
 Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill. (See page 307.)

CUPS AND COVERS, Spring Leaf Lubricating, for Fords

(Oil cups or boxes, felt oilers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks)

Bowen Products Corp., Auburn, N. Y. (See page 321.)
 Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Rello."
 Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.
 Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 981.)
 Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Mobile Mfg. Co., Chicago, Ill.)
 Mobile Mfg. Co.—See Jessop & Thompson.
 Rello—See Brown Spring Oiler Co.
 Retco—See Tupper & Co.
 Tupper & Co., R. E., Sandwich, Mass. "Retco."
 Waters Bros. Co., 6548 Greenview Ave., Chicago, Ill.

CURB BOXES—See Boxes, Standard and Curb

CURING BAGS—See Bags, Steam Tire Curing

CURLED HAIR—See Hair, Upholstery

CURRENT RECTIFIERS—See Rectifiers, Alternating Current

CURTAIN CASES FOR FORDS—See Cases, Curtain

CURTAIN CLIPS—See Clips, Curtain

CURTAIN FASTENERS—See Fasteners, Curtain

CURTAIN LIGHTS—See Lights, Curtains; also Windows, Glass Curtain

Everything is listed under the NOUN or principal word

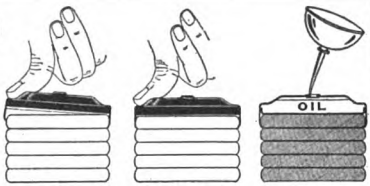
G.L.W. Auto SPRING OILER



Snap-- and they are on!

GOLD MEDAL
PANAMA-CALIFORNIA EXPOSITION

G.L.W. Spring Oiler Co. Savoy Theatre Bldg.
SAN DIEGO, CALIF.



Automobile springs are made in six standard widths, so are G. L. W. Spring Oilers—1½, 1¾, 2, 2¼, 2½ and 3 inch. Manufactured under basic Patent Rights; made of the best material and last a lifetime. Do their work automatically and efficiently. Retail price, 25c each.

REICHERT EMERGENCY TIRE CHAIN No. 220



Reichert's Emergency Tire Chains are easily and quickly adjusted when you are in trouble. Place the malleable clamp on the spoke, then slip the chain over the tire and hook the snap in the loop—that's all. No jacks or tools required.

A set of four chains, packed in a bag, is sufficient to pull you out of the mud, sand or snow.

Important—State size of tires when ordering.

Write for descriptive circular
IMPERIAL BIT & SNAP CO.
Racine, Wis.



Ball Solderless Fittings

For Gasoline, Oil or Air Lines

No Soldering

No Flaring

No Threading

In addition to all styles of Ball Solderless Fittings, we manufacture a complete line of S. A. E. Flared Tube Fittings, Brazing Connections, standard Pipe Fittings and special fittings to customers' order.

MADE ONLY IN BRASS

Stock patterns from ¼" to ½" inclusive.
Ask for Catalog No. 28, listing full line.

COMMONWEALTH BRASS CORPORATION
Detroit, Mich.



"EVEREADY" AUTO AND OUTING LUNCH KIT

The only practical Lunch Kit at a price within the reach of all
Complete Service for Six People

Heavy, 3-ply veneer, genuine basswood case, strongly made; size 18x12x6 inches; covered and lined with waterproof, wear-resisting fabrics. Quality fittings. Place for everything. Just what your trade wants.

Write today for Particulars

THE BEN S. LOEB COMPANY
200 5TH AVE., NEW YORK

Please mention The Automobile Trade Directory

CURTAIN OPENERS—See *Openers, Curtain*

CURTAIN OPENING FITTINGS—See *Openers, Curtain*

CURTAIN ROLLERS—See *Rollers, Curtain*

CURTAIN WINDOWS—See *Lights, Curtain*; also *Windows, Glass Curtain*

CURTAINS, Special Top

(For ordinary curtains—See *Tops, Automobile*)

Axton-Cozine Mfg. Co., 2206 12th St., Detroit, Mich. "Cozine."
Brackbill Co., B. F., 1953 Laveer St., Philadelphia, Pa.
Cozine—See Axton-Cozine Mfg. Co.
Jiffy Auto Curtain Co., 404-06 E. Jefferson Ave., Detroit, Mich.
Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.
Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 327.)

CURTAINS, Special Top, for Fords

(For ordinary curtains—See *Tops, Special*)

Cleveland Top & Specialty Co., Carnegie & E. 65th St., Cleveland, O.
Copp Co., George W., 518 W. 58th St., New York, N. Y. (See page 983.)
Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Ustus."
Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
R-E—See *Roose Mfg. Co.*
Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
(See pages 125, 143, 307 and 983.)
Storm King Mfg. Co., Hartford, Wis.
Ustus—See *Dafoe-Eustice Co.*

CUSHIONS, BACK REST—See *Rests, Cushion*

CUSHIONS, Radius Rod for Fords

Warren & Co., Frank R., 2214 Michigan Ave., Chicago, Ill.

CUSHIONS, Special Seat

(For ordinary cushions—See *Bodies*; also *Tops*)

Brackbill, Chas., 2419 N. Broad St., Philadelphia, Pa.
Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Freedman Upholstery Co., 615-19 E. 47th St., Chicago, Ill. "Orno."
(See page 327.)
Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.

Kant Sag—See *Modern Upholstery Co.*
Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.
Modern Upholstery Co., 926-28 St. Aubin Ave., Detroit, Mich. "Kant Sag."
Orno—See *Freedman Upholstery Co.*
Perfection—See *Pneumatic Mfg. Co.*
Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."
Red Diamond—See *Reynolds Spring Co.*
Reynolds Spring Co., Jackson, Mich. "Red Diamond." (See page 1051.)
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

CUSHIONS, Special Seat for Fords

Aero—See *Detroit Spring Co.*
All-Wanta—See *Fort Pitt Bedding Co.*
Detroit Spring Co., 406 W. Jefferson Ave., Detroit, Mich. "Aero."
Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. "All-Wanta." (See page 329.)
Freedman Upholstery Co., 615-19 E. 47th St., Chicago, Ill. "Orno."
(See page 327.)
Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
Orno—See *Freedman Upholstery Co.*
Tower & Co., Cohasset, Mass.

CUTOUT PEDALS—See *Pedals, Horn*

CUTOUTS, Automatic Ignition, for Fords

(For automatically breaking the ignition circuit when motor stops with switch on)

Ewing & Ewing, Jeromeville, O.

CUTOUTS, MUFFLER—See *Valves, Muffler Cut-Out*; also *Pedals, Horn and Cut-Out*

CUTOUTS, Reverse Current

(For automatically connecting the generator to the battery when the voltage is high enough to charge the battery and disconnecting it when the voltage is too low)

Basco—See *Briggs & Stratton Co.*
Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."
New York Coil Co., 338-40 Pearl St., New York, N. Y.

CUTTER GRINDERS—See *Grinders, Reamer*

CUTTERS, BAR—See *Cutters, Rod and Bar*

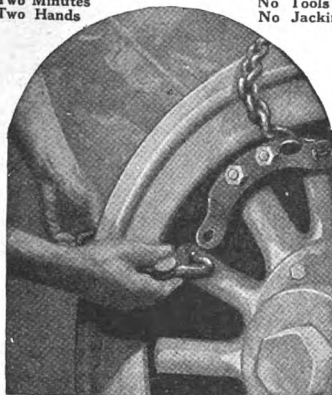
CUTTERS, Brake Lining

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See *Peck, Stow & Wilcox Co.*

Everything is listed under the NOUN or principal word

Two Minutes
Two Hands

No Tools
No Jacking



Necessary Equipment on Every Truck
The quickest and easiest way out of mud holes and bad going. Clamps permanently attached to wheels—outlast the truck. Fewest models for dealers to handle. Write for details.

GIANT GRIP MFG. CO.
Formerly named Challenger Company
Established 1883. Oshkosh, Wis.
New York Distributors: Shultz Automotive Corporation, 16-22 W. 61st St., New York City, N. Y.

Giant Grip

Traction Equipment for Motor Trucks

AUTO SEAT CUSHIONS

The secret of the Orno's superiority is its simplicity. Note the absence of all unnecessary wire connections. When you stop to consider that the life of the average wire fastener is never more than five months the reason for the Orno's superiority is apparent.

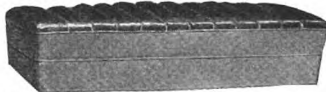


Fig. 1—Smooth upholstered top. The wooden top frame keeps the upholstering firm and perfectly even at all times. This structure is well adapted for truck seats, but it may also be used for pleasure cars. This seat will last as long as any auto.

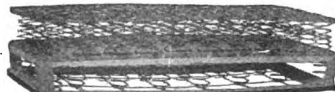


Fig. 3—Our specially designed Orno seat for high class cars. It is the most comfortable seat that can be put into a car, and one that positively absorbs every shock. The right seat for the highest grade of pleasure car.

MFRS. — SEND US YOUR SPECIFICATIONS AND WE WILL QUOTE YOU
Freedman Upholstering Company, Inc.
MANUFACTURERS
CHICAGO 615-19 East 47th St. ILLINOIS

Cunningham & Berrien, Inc.

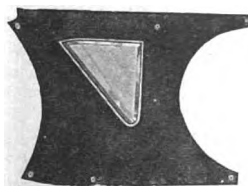
25 West 43rd Street

New York City

Manufacturers' Representatives

Eastern and Export Sales Dept. Perfection Tires and Tubes

Telephone Murray Hill 4212



Style A
(Shown with No. 68 Glass
6 Styles of Curtain
17 Styles of Glass

"California Top" Style for Your Car

By using our Plate Glass Side Curtain on any Standard Factory Top. Easy to attach or detach

Any { Style || Made Where
Size || The Style
Car || Originated

Dealers send for sales Poster.

Shugers Mfg. Co.

1002-4 Los Angeles Street,
Los Angeles



SHUGERS MFG CO LOS ANGELES

Please mention The Automobile Trade Directory

CUTTERS, Circular Glass*(For cutting lamp or instrument glasses)*

Goodell-Pratt Co., Greenfield, Mass.
 Millers Falls Co., Millers Falls, Mass. "Star."
 Red Devil—See Smith & Hemenway.
 Shawver Co., rear 21 W. Pleasant St., Springfield, O.
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Star—See Millers Falls Co.

CUTTERS, GASKET—See Cutters, Washer and Gasket

CUTTERS, GLASS—See Cutters, Circular Glass

CUTTERS, LINING—See Cutters, Brake Lining

CUTTERS, Milling

Advance Machinery Co., Van Wert, O.
 American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampeco."
 Ampeco—See American Machine Products Co.
 Barber-Colman Co., Rockford, Ill.
 Becker Milling Machine Co., 53 Franklin St., Boston, Mass.
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
 Blancke Twist Drill & Tool Co.—See Blancke Co.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Cleveland Twist Drill Co., Cleveland, O. (See page 365.)
 Clough, R. M., Tolland, Conn.
 Cowles Tool Co., 2086-96 W. 110th St., Cleveland, O.
 Curvex—See Pratt & Whitney Co.
 Davidson Tool Mfg. Co., 118-22 Maiden Lane, New York, N. Y.
 Detroit Twist Drill Co., Detroit, Mich. (See page 777.)
 Detroit Reamer & Tool Co., Detroit, Mich. (See page 777.)
 Goddard & Goddard Co., 4724 Hastings St., W., Detroit, Mich.
 Haynes Stellite Co., Citizens Bank Bldg., Kokomo, Ind. "Stellite."
 Hergl Mfg. Co., Bridgeport, Conn.
 Holmes Special Tool Co., 33 Canal St., New Haven, Conn.
 Illinois Tool Works, 154 E. Erie St., Chicago, Ill.
 Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)
 Lincoln Twist Drill Co., Arlington St., Taunton, Mass.
 McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Tool Co., W. 112th St. & Madison Ave., Cleveland, O.
 National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.
 New Britain Mfg. Co., 5 Harvard St., New Britain, Conn.
 Parker Machine Co., 231 High St., Boston, Mass.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Pittsburgh Saw & Mfg. Co., 32d & Smallman Sts., Pittsburgh, Pa.

Polk & Son Co., A. J., Millersburg, Pa.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Curvex."
 (See page 373.)

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.
 Republic Tool & Mfg. Co., 1390-1401 W. Ninth St., Cleveland, O. (Jobbers.)
 (See page 365.)

Screw Machine Products Corp., 1013 Eddy St., Providence, R. I.

Scott-Spencer Automatic Tool Co., Cincinnati, O.

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Stellite—See Haynes Stellite Co.

Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor-Newbold."

Taylor-Newbold—See Tabor Mfg. Co.

Thurston Mfg. Co., 140 Benedict St., Providence, R. I.

Tindel-Morris Co., Eddystone, Pa.

Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.

Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.

Whitney Mfg. Co., Hartford, Conn.
 (See page 233.)

CUTTERS, PISTON RING GROVE CARBON—See Tools, Piston Ring Groove Cleaning

CUTTERS, Rod and Bar*(Hand Power)*

Armstrong-Blum Mfg. Co., 323 N. Francisco Ave., Chicago, Ill. "Marvel."

Braunedorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Burgess Machine Co., 45 Chestnut St., New Haven, Conn.

Hercules—See Tucker, W. H. & C. F.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Roberts Mfg. Co., Boston, Mass. "Victor.") (See page 344.)

Marvel—See Armstrong-Blum Mfg. Co.

Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa. "Vulcan."

Roberts Mfg. Co.—See Jonas, C. N. & F. W.

Schats Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.

Tucker, W. H. & C. F., Hartford, Conn. "Hercules." (See page 305.)

Victor—See Jonas, C. N. & F. W.

Vulcan—See Merwin Mfg. Co.

Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.

CUTTERS, ROTARY—See Saws and Cutters, Rotary

CUTTERS, Washer or Gasket

Bonney Forge & Tool Works, Allentown, Pa. "Cooper."

Braunedorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Cooper—See Bonney Forge & Tool Works.

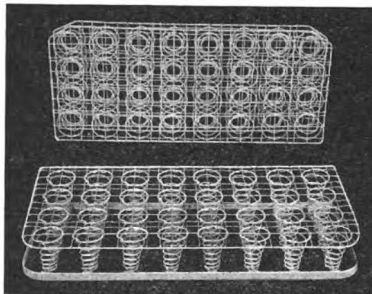
Goodell-Pratt Co., Greenfield, Mass.

Hartson, C. E., 120 Congress Ave., Rochester, N. Y.

Everything is listed under the NOUN or principal word

SPRING CONSTRUCTION For Automobile Seat Cushions

Made of the
best
materials
available



Made in all
sizes and
for all
purposes

High tempered coil springs 'securely fastened to wood or steel frames used throughout. Write us about your requirements.

FORT PITT BEDDING COMPANY
N. S., PITTSBURGH, PA.

The RAD-A-THAW

Price, \$7.50

Prevents radiator from freezing when in use. Thaws out radiator if frozen when car stands. Covers enough radiator for efficient winter driving. Vapor from radiator helps keep radiator warm. Put on or taken off in two minutes without tools.

No ANTI-FREEZE mixture.

Use pure water.

Put on car you can forget your winter troubles and you won't have to get hot water to thaw you out. For Fords, Maxwells, Overlands, and all Thermo-Syphon Radiators.

Dealers Write or Wire for Protected
Agency and Price.

FOX-COBE MFG. CO., Inc.
280 Ninth Ave., N. Y. City

THE IDEAL LUGGAGE CARRIER

Sells on Sight!

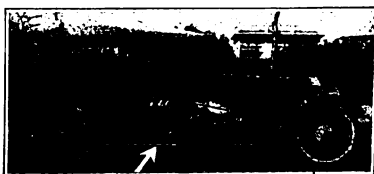
Puts Passengers and Luggage each in their proper place—the luggage safe, out of the way, yet always in easy reach.

This all-steel, folding and adjustable carrier can be attached or removed without tools. Fits all running boards and extends from 6 to 66 inches. Height 16 inches. Can be carried in tool box when not in use.



Write for Prices and Territory

WILLIAM SCHWENN IRON WORKS
822-832 Lexington Avenue, Brooklyn, N. Y.



Please mention The Automobile Trade Directory

CUTTERS, Washer or Gasket (Continued)

Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.
 Krauter & Co., Newark, N. J. (See page 1001.)
 Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 1011.)
 Rose Mfg. Co., J. A., 105 S. Kansas Ave., Hastings, Neb.
 Smith, Otis A., Rockfall, Conn.
 Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.
 Wilder Mfg. Co., 1819 N. 17th St., St. Louis, Mo. (See page 331.)

CUTTING COMPOUNDS—See Lubricants, Cutting**CUTTING DIES—See Taps and Dies****CUTTING LUBRICANTS—See Lubricants, Cutting****CUTTING OILS—See Lubricants, Cutting****CUTTING STEEL—See Steel, Self-Hardening Cutting****CYANIDE HARDENING — See Treating, Heat****CYLINDER BOLTS FOR FORDS — See Bolts, Special****CYLINDER BORING MACHINES—See Machines, Boring****CYLINDER CASTINGS — See Castings, Gray Iron****CYLINDER CLEANING COMPOUNDS—See Compounds, Carbon Removing****CYLINDER CLEANING MACHINES—See Machines, Engine Decarbonizing****CYLINDER GAGES—See Gages, Cylinder****CYLINDER GRINDERS—See Grinders, Cylinder****CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding****CYLINDER HEAD GASKETS FOR FORDS — See Gaskets, Cylinder Head****CYLINDER HEADS FOR FORDS — See Heads, Special Cylinder****CYLINDER JIGS FOR FORDS—See Reamers and Jigs, Cylinder****CYLINDER LAPPING TOOLS—See Tools, Cylinder Lapping****CYLINDER LUBRICATING CUPS—See Lubricators, Cup Cylinder****CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder****CYLINDER OILS—See Oils****CYLINDER REAMERS FOR FORDS—Reamers and Jigs, Cylinder****CYLINDER REBORING MACHINES—Machines, Cylinder Reborer; for Cylinder Reborer Tools—See Tools, Portable Cylinder Reborer****CYLINDER REBORING TOOLS — Tools, Portable Cylinder Reborer****CYLINDER REBORING TOOLS FOR FORDS—See Tools, Cylinder Reborer****CYLINDERS, Finished or Mach**

(For cylinder castings in the rough—See On Gray Iron)

Detroit Foundry Co., 2642 E. Grand Detroit, Mich.
 Ferro Machine & Foundry Co., 47 Hu Ave., Cleveland, O.
 Fulton Foundry & Machine Co., 25 Ft St., Brooklyn, N. Y.
 Stroh Castings Co., 80 Chene St., D Mich.
 Wainwright Engineering Corp., Con ville, Ind. (See page 715.)

CYLINDERS, Regrinding of

(See also Welding, Autogenous; also Machine

Acme Mfg. Works, 660 Turk St., San cisco, Cal.
 Adapt Machinery Co., 1624-32 S. Wabas Chicago, Ill.
 American Engine & Airplane Co., 28 Pico St., Los Angeles, Cal.
 Anderson, H. S., 211-19 N. Sheridan Pittsburgh, Pa.
 Arizona Machinery Mfg. Co., 222-26 N. E Ave., Phoenix, Ariz.
 Arlington Machine Works, 668-74 Jer St. Paul, Minn.
 Auto Engine Works, University Ave. & St., St. Paul, Minn.
 Bernhard & Turner Automobile Co., 501 Seventh St., Des Moines, Ia.
 Blass Automotive Engineering Co., 975-85 Geary St., San Francisco, Ca.
 Blettner, Geo. H., 1401-06 Jackson Blv cago, Ill.
 Bracken Cylinder Regrinding Co., Hs 150 Social Hall Ave., Salt Lake Cit
 Bridgeport Piston Ring Co., Connectic & Third St., Bridgeport, Conn.
 Bu-Nite—See Butler Mfg. Co.
 Buffalo Cylinder Grinding Co., 889 M Buffalo, N. Y.
 Burt Motor Car Co., W. J., Pico & Hc Los Angeles, Cal.
 Butler Mfg. Co., 3234 W. Washing Indianapolis, Ind. "Bu-Nite."
 C. & E. Motor Co., Indiana, Pa.
 Charter Oak Machine Co., 438 St., Hartford, Conn. (See page 3
 Club Auto Parts & Machine Co., 304-06 St., Buffalo, N. Y.
 Cook Auto Machine Co., J. B., 247 Ave., Memphis, Tenn.

Everything is listed under the NOUN or principal word

We do
**Cylinder Regrinding
and Welding**

We can also supply
**Oversize Pistons
Oversize Rings
and
Oversize Piston
Pins**

for several hundred makes
and models of cars.

Waterbury Welding Co.
1147 South Main St.
Waterbury, Conn.

**CYLINDER GRINDING
BY SPECIALISTS**

WITH MODERN PRECISION EQUIPMENT

WRIST PIN SCORES

Permanently Repaired by "Lawrence
Process." Quality and Service

FULL LINE OF
PISTONS AND RINGS

Right Prices

CHARTER OAK MACHINE CO.
HARTFORD, CONN.,
438 Asylum Street
SPRINGFIELD, MASS.,
173 Chestnut Street



Die Cutters of Gaskets

from

Fiber Sheet Packing and Fibrous Material

Gaskets cut by our process from our Purbestos and Gratone Brand are the best and most economical that can be had.

WILDER MFG. CO.

1819 N. 17th Street
St. Louis, Mo.



Cylinder and Crank Shaft Regrinding



Our special grinding equipment with skilled workmen will insure high grade service. Standard and over-size pistons, rings and pins carried in stock for all makes of cars and trucks.

**SCORE FILLING—EAGLE PROCESS
PURELY MECHANICAL—NO HEATING**

Send for Booklet D



TRANTER MANUFACTURING COMPANY
105 Water Street, Pittsburgh, Pa.

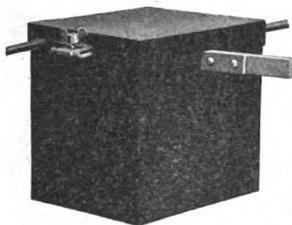
Please mention The Automobile Trade Directory

CYLINDERS, Regrinding of (Continued)

- Demster, W. R., 1216-13 Oak St., Kansas City, Mo.
- Diebel, A. J., 976 Woodward Ave., Detroit, Mich.
- Doerr Motor Works, Louis J., 18th & Allen Sts., St. Louis, Mo.
- Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
- Durham Co., P. J., 244 W. 49th St., New York, N. Y.
- Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
- Edwards Motor Co., 311-15 S. 12th St., Minneapolis, Minn.
- EGGE, E. N., 1326 S. Main St., Los Angeles, Cal.
- Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
- Engine Service Co., Bank St. & Western Ave., Cincinnati, O.
- Evarts Machine Co., 33 Francis Ave., Hartford, Conn.
- Fargo Motor Co., 1162-64 W. 22d St., Chicago, Ill. (See page 611.)
- Frostholt Bros., 1809 Park St., Syracuse, N. Y.
- Gabel Bros., 35 Third St., Fond du Lac, Wis.
- Goodin Motor Service Corp., 333 S. Lawrence St., Wichita, Kans.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Green Engineering Co., Main St. & Burns Ave., Dayton, O.
- H. & H. Machine Co., 4274 Easton Ave., St. Louis, Mo.
- Hanke Iron & Wire Works, Albany, Grand & Chicago Aves., Chicago, Ill.
- Hawkeye Truck Co., Sioux City, Ia. (See page 47.)
- Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.
- Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.
- Hinckley Cylinder Grinding Co., 172 Middle Ave., Aurora, Ill.
- Hingley, J. A., 1816-18 Blake St., Denver, Colo.
- Houper Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 325.)
- Iowa Cylinder & Piston Co., Lattner Bldg., Cedar Rapids, Ia.
- Jahn Grinding Works, 709 W. Second St., Davenport, Iowa.
- Jahns, W. H., 1661 Lacy St., Los Angeles, Cal.
- Kemp Machine Works, 1215 S. Franklin St., Muncie, Ind.
- Kinslow Machine Works, H. M., 413-15 W. Fifth St., Santa Ana, Cal.
- Lake Sales Co., 1947 Broadway, New York, N. Y. (See page 807.)
- Lammert & Mann Co., 215-221 N. Wood St., Chicago, Ill.
- Litters Motor Machine Shop, 240 N. Fourth St., Columbus, O.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- McCadden Machine Works, 502-12 Fourth St., N., St. Cloud, Minn.
- Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
- Midland Machine Works, 221-25 S. Third St., Muskogee, Okla.
- Milwaukee Cylinder Grinding Co., Wiel & Concordia Aves., Milwaukee, Wis.
- Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.
- Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind.
- Modern Tool, Die Machine Co., 214-30 N. Fourth St., Columbus, O. (See page 357.)
- Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.
- National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
- Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y.
- Nilson-Miller Co., 1800-06 Hudson St., Hoboken, N. J.
- Noonan Mfg. Co., D. R., Paris, Ill.
- Odum Bros. Co., E. H., 19 James St., Atlanta, Ga.
- Park Machine Co., 176 W. Third St., St. Paul, Minn.
- Patch Co., E. A., 17 Ipswich St., Boston, Mass.
- Peterson Machine Co., 24 E. 29th St., Brooklyn, N. Y.
- Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.
- Precision Machine Co., Riggs Bldg., Washington, D. C.
- Rabaus & Toeller, Cedar Rapids, Ia.
- Ryser Machine Works, 931-35 E. 43d St., Chicago, Ill.
- St. Paul Auto Cylinder Grinding Co., 1152 Rice St., St. Paul, Minn.
- Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.
- Salzer Tool Works, 328 Washington Ave., Newark, N. J.
- Saucke Bros., 47 Franklin St., Rochester, N. Y.
- Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia.
- Scored Cylinder Works, 433 Golden Gate Ave., San Francisco, Cal.
- Sloat, E. R., 5930 Woodward Ave., Detroit, Mich.
- Smith-Hamburg-Scott Welding Co., 505 W. 57th St., New York, N. Y.
- Sprigg, Z. T., 1942 Arapahoe St., Denver, Colo.
- Stafford Machine Works, 2201-05 Campbell Ave., Kansas City, Mo.
- Standard Tool & Engineering Co., Indiana & Lafayette Sts., South Bend, Ind.
- Standard Welding & Machine Co., 416 E. Second St., Des Moines, Iowa.
- Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
- Sunderland Machine Shops, Omaha, Neb. (See page 349.)
- Sure Pressure Acetylene Generator Co., 1010-12 W. Main St., Oklahoma City, Okla.
- Swan, H. O., Mattoon, Ill.
- Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
- Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 331.)
- Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 311.)
- U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.
- Vulcan Brazing & Machine Co., 2126-28-30 Race St., Philadelphia, Pa. (See page 739.)
- Wadell Motor Corp., 661-71 Freylinhuysen Ave., Newark, N. J.
- Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 331.)
- Weems, M. K., Maine & 11th Sts., Quincy, Ill.
- Western Fixture Co., 573-75 E. Water St., Milwaukee, Wis.

Everything is listed under the NOUN or principal word

A Line of Accessories and Shop Tools that means
Increased Profits and Efficiency for You -

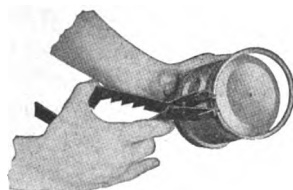


TIP TOP TIPTON
BATTERY BOX FOR FORD CARS

TIPTON PRODUCTS represent value—value in mechanical perfection and value in the efficient service they give. Tipton Products consist of a line of automobile accessories and shop tools designed to fill a specific and recognized need and they may be counted upon to deliver a service comparable to none.

The Tipton Battery Box for Ford Cars is a 22-gauge sheet steel box electrically welded. The cover is fastened by means of wing nuts and cannot come in contact with terminals. Cable openings arranged to fit all makes of batteries. Heavily coated with black, acid-proof paint. Easily installed, rattle-proof.

List Price\$3.00



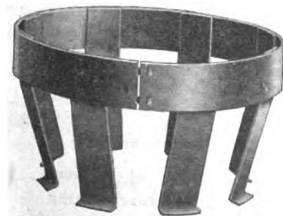
TIP TOP TIPTON
PISTON RING TOOL

The Tipton Piston Inserter is one of the most useful time and labor-saving tools ever made for the repairshop. It enables you to quickly insert a piston equipped with any make of rings and you can't injure the rings or your fingers, or score the cylinder. Can be used for top or bottom of cylinder.

Made in 4 sizes for all motors:

- | | | |
|--------|----------|-------------|
| No. 1. | 2¾ to 3¼ |\$2.00 |
| No. 2. | 3¼ to 3¾ | 2.00 |
| No. 3. | 3¾ to 4¼ | 2.00 |
| No. 4. | 4¼ to 4¾ | 2.00 |

Complete set of four packed in one carton 8.00
Special Ford Type..... 2.00



TIP TOP TIPTON
PISTON INSERTER

The Tipton Piston Ring Tool is a time saving two-purpose tool—for removing and replacing piston rings and for removing carbon from the ring grooves. With this tool you can't break or spring the rings or injure your hands. Strongly made; black enameled.

List Price.....\$2.00

Order thru your jobber today. If he can't supply you, write to us direct

THE TIPTON MANUFACTURING CO.
Tipton, Iowa

CYLINDERS, Regrinding of (Continued)

- White Auto Repair Co., 502 E. Main St.,
Chanute, Kans.
Wilkie's Garage & Machine Works, 208 W.
Third St., Winona, Minn.
Woodruff Engineering Co., 5315 Euclid Ave.,
Cleveland, O.
Woodward, Geo. H., 1455 Bush St., San Fran-
cisco, Cal.
Youngstrom Co., Carl, 417 12th St., Des
Moines, Ia.

CYLINDERS, Repairing of Scored

(See also Welding; also Cylinders, Regrinding of)

- Automotive Engineering Co., Dayton, O.
Blanchette Welding Co., 149-51 S. Broadway,
Denver, Colo.
Buckeye Welding & Repair Shop, 133 Water
St., Lima, O.
Charter Oak Machine Co., 438 Asylum St.,
Hartford, Conn. (See page 831.)
Cincinnati Welding & Repair Co., 410-12 Rich-
mond St., Cincinnati, O.
Day Welding Co., 48 Sumner Ct., N. W.,
Washington, D. C.
Eagle Machine Co., 24 N. Noble St., Indianapo-
lis, Ind.
Emerson Mfg. Co., 3529 Gratiot Ave., Detroit,
Mich.
Holme Machine Works, 4160 Minnehaha Ave.,
Minneapolis, Minn.
Hoag Welding Co., 81 E. Court St., Spring-
field, Mass.
Lawrence & Co., L., 292 Halsey St., Newark,
N. J.
Pondelick Bros., 215 S. Leavitt St., Chicago,
Ill.
R. I. Score Filling Co., Providence, R. I.
Trindl Co., Wabash Ave. & 29th St., Chi-
cago, Ill. (See page 811.)

DASH CARBURETOR CONTROLS FOR FORDS—See Controls, Dash Carburetor

DASH CONTROLS—See Controls, Dash and Steering Column Carburetor

DASH CONTROLS FOR FORDS—See Con- trols, Dash Carburetor

DASH COWLS FOR FORDS—See Cowls, Dash

DASHBOARD GAGES—See Gages

DASHBOARD LAMPS—See Lamps, Elec- tric Dash

DASHBOARD MIRRORS—See Mirrors, Adjustable

DASHBOARD PURCHASE REGISTERS— See Registers, Dashboard Purchase

DASHBOARD VENTILATORS—See Ven- tilators, Dashboard

DASHBOARDS—See Dashes

DASHES, Metal

(Pressed or stamped metal dash or instrument boards)

- Central Service Corp., 1607 Merchants
Bank Bldg., Indianapolis, Ind. (Sales
Representative.) (See page 335.)
Hayes Mfg. Co., 4525 Maybury Grand Ave.,
Detroit, Mich.
Heil Co., 1136-40 Montana Ave., Milwau-
kee, Wis. (See page 139.)
Hotchkiss Metal Form Co., 16 Jarvis St.,
Binghamton, N. Y. (See page 335.)
Parish Mfg. Co., Reading, Pa.
(See page 419.)
Sheet Steel Products Co., Bryan, O.
Western Metal Specialty Co., Milwaukee,
Wis. (See page 657.)

DASHES, Wood

(Laminated wood dash or instrument boards)

- Almapeer Veneer & Seating Co., Algoma, Wis.
American Veneer Co., 15th & Clinton Sts., Ho-
boken, N. J.
Bay City Auto Body Co., Center Ave. & Pere
Marquette R. R., Bay City, Mich.
Builders Mfg. Co., 828-30 N. Wells St.,
Chicago, Ill. (See page 141.)
Dann Bros. & Co., 84 Franklin St., New
Haven, Conn.
Detroit Auto Dash Co., 1501 E. Philadelphia
Ave., Detroit, Mich.
Eggers Veneer Seating Co., F., 19th St. & Jef-
ferson Ave., Two Rivers, Wis.
Grand Rapids Veneer Works, 300-300 Front
St., Grand Rapids, Mich.
Hanson-Ward Veneer Co., Bay City, Mich.
Hartford Pattern & Model Co., 120 Allyn St.,
Hartford, Conn.
Haakelite Mfg. Corp., 133 W. Washington St.,
Chicago, Ill.
Louisville Veneer Mills, 1100-40 Fulton St.,
Louisville, Ky.
New Jersey Veneer Co., 258 W. Railway Ave.,
Paterson, N. J.
Roddie Lumber & Veneer Co., Marshfield, Wis.
Standard Cabinet Mfg. Co., E. Canal St., Peru,
Ind.
Wisconsin Cabinet & Panel Co., Beacon Ave.,
New London, Wis.

DAZZLE DIMMERS—See Dimmers, Glare

DEALER MERCHANDISING PLANS—See Plans, Dealer Merchandising

DECALCOMANIA MONOGRAMS — See Transfers, Decalcomania

DECALCOMANIA TRANSFERS — See Transfers, Decalcomania

DECARBONIZING MACHINES—See Ma- chines, Engine Decarbonizing

DEFLATING TOOLS—See Tools, Tire De- flating

DEFLATORS, TIRE—See Tools, Tire De- flating; also Machines, Tube Deflating

DEFLECTING LENSES—See Dimmers or Shades, Headlight

Everything is listed under the NOUN or principal word



Hotchkiss Design Steel Dash

Sheet Metal Parts for Motor Trucks and Tractors

We have every facility for channeling, bending, angling, and forming sheet metal in every conceivable shape.

We manufacture steel dashes, toe plates, floor plates, pressed steel running boards, folded equalizer bars, radiator guards, hood ledge supports, and other sheet metal parts.

Write for information and price on our standard one-piece steel dash, and give us an opportunity to quote on your specifications and blue prints.

HOTCHKISS METAL FORM CO.

16 Jarvis Street

Binghamton, N. Y.



This is the bag that brings you the perfect protection for spare shoes. The Allen Tire Case—it's useful, too, in many different ways.

Truly the Allen Tire Case is as necessary as the spare itself, because it helps the shoe deliver full mileage by preventing the destructive effects of sunlight, water and oil.

Aside from its utility, the Allen Tire Case adds greatly to the appearance of the car. Made in several styles and all colors to suit individual taste.

THE ALLEN AUTO SPECIALTY CO.

MAKERS OF THE ALLEN SHUTTER RADIATOR COVER

18 West 51st St., New York, N. Y.

Chicago Branch—2807 Michigan Avenue

**The ALLEN
TIRE CASE**

W. E. PRUDEN HARDWARE CO.

**MANUFACTURERS
REPRESENTATIVES
AND JOBBERS**

**Automobile Supplies,
Machinists Supplies,
Iron, Steel, Metals,
Electrical Supplies
and General
Hardware**

864-866 Eight Ave., 260-262 W. 52d St.
NEW YORK CITY

“SERVICE” IS OUR MIDDLE NAME”

We Are Direct Manufacturer's Representatives

Engines, Transmissions, Universal Joints, Radiators, Sheet Metal Parts, Stampings (light or heavy) Castings (Aluminum, bronze, brass or malleable) Drop Forgings, Patterns (Wood or Metal) Automatic Screw Machine Products, etc., also:

THE DAYTON “DISCWOOD” WHEEL

(The Modern Equipment for Cars and Trucks)

Send us your Inquiries

CENTRAL SERVICE CORPORATION

1607 Merchants Bank Building

Indianapolis, Indiana

Please mention The Automobile Trade Directory

DEFLECTORS, Exhaust, for Fords

(Stamped steel attachment for end of exhaust pipe to deflect the exhaust gases from spare tires or any part of a car)

Corcoran Mfg. Co., 4634 Spring Grove Ave., Cincinnati, O.

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Worthington, A. F., 706 N. Main St., Los Angeles, Cal.

DEFLECTORS, Heat, for Fords

(Rubber or metal deflectors to attach to front door board to prevent heat from motor entering body)

Aash and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Deflectors.) (See page 243.)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)

Clifton Mfg. Co., 328-27 Pleasant St., Waco, Tex.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Franklin Rubber Co., 124 Federal St., Boston, Mass.

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

Lockwood Mfg. Co., Kansas City, Mo.

Metal Specialties Mfg. Co., 333-33 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)

Presto—See Metal Specialties Mfg. Co.

DEFLECTORS, LIGHT—See Dimmers or Shades

DEFLECTORS, MUD, FOR FORDS—See Fans, Radiator Splash

DEFLECTORS, Oil, for Fords

Perfector Mfg. Co., 206 S. Spring St., Los Angeles, Cal.

DEFLECTORS, WIND—See Shields, Auxiliary Wind

DEMOUNTABLE DISC WHEELS—See Wheels, Demountable Disc

DEMOUNTABLE HUBS FOR FORDS—See Hubs, Demountable

DEMOUNTABLE RIM BOLTS—See Bolts, Special Demountable Rim

DEMOUNTABLE RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

DEMOUNTABLE RIM SHIMS—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIMS—See Rims, Removable

DEMOUNTABLE RIMS FOR FORDS—See Rims, Demountable

DEMOUNTABLE WHEELS FOR FORDS—See Hubs, Demountable

DEMOUNTABLE WIRE WHEELS—See Wheels, Demountable Wire

DENATURED ALCOHOL—See Alcohol, Denatured

DENATURED ETHER—See Ether, Denatured

DEPTH GAGES—See Gages, Depth

DESIGNERS, Special Machinery and Tool

Dowd Engineering Co., Albert A., 131 W. 39th St., New York, N. Y.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)

Service Engineering Co., 25 Church St., New York, N. Y.

Taft-Pelree Mfg. Co., Woonsocket, R. I.

DETACHABLE MOTORS, MOTOR BOAT—See Engines, Motor Boat Outboard

DETACHABLE RIMS—See Rims, Removable

DEVICES, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

DIALS, CLOCK—See Dials, Luminous

DIALS, Luminous

(Concerns who illuminate clock, gage and meter dials; for Luminous Materials—See Paints, Luminous.)

General Etching & Mfg. Co., 313 S. Hamilton Ave., Chicago, Ill.

Luma—See Radium Dial Co.

Radium Dial Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."

Radium Luminous Material Corp., 58 Pine St., New York, N. Y. "Undark." (See page 337.)

Undark—See Radium Luminous Material Corp.

DIALS, SPEEDOMETER—See Dials, Luminous

DIE CAST BEARINGS—See Castings, Die

DIE CAST BUSHINGS—See Bushings, Bronze and Die Cast

DIE CASTINGS—See Castings, Die

DIE CUTTING MACHINES—See Machines, Die Cutting

Everything is listed under the NOUN or principal word

UNDARK

RADIUM
LUMINOUS
MATERIAL



"I Want That On Mine"

Gasoline gauges illuminated with **UNDARK** can be seen on the darkest spot of road or garage without the aid of electric torch or the danger of a lighted match.

UNDARK also makes oil level floats visible in the dark, minimizing the danger of burned-out bearings and scored cylinders.

UNDARK is the compound that makes watches, clocks, compasses, electric switches and hundreds of other things as useful in darkness as in the light.

UNDARK doesn't get dark in the dark

Pierce Arrow, Kissel-Kar, Stevens-Duryea, Lincoln, McFarlan, Stutz and others have **UNDARK** gasoline gauges as standard equipment.

UNDARK contains real radium.

We are miners and refiners of radium bearing ore, also the pioneer and largest manufacturers of radium luminous material in the world. Automobile manufacturers are invited to send gauges for sample treatment.

RADIUM LUMINOUS MATERIAL CORP'N
58 Pine St., New York City

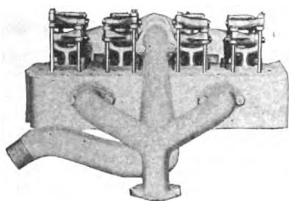
Factories: Orange, N. J. Mines: Colorado and Utah
Trade Mark Name **UNDARK** Reg. Applied For

Please mention The Automobile Trade Directory

DIE STOCKS—See Stocks, Die**DIES, FORGING—See Dies, Jigs, Tools and Fixtures****DIES, JIGS, TOOLS and FIXTURES**

- Ability Tool & Mfg. Co., 4100 Lincoln Ave., Chicago, Ill.
- Acme Electric & Mfg. Co., 203 St. Clair St., N. E., Cleveland, O.
- Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.
- Acme Tool & Die Co., 314 E. Water St., Syracuse, N. Y.
- Adell Mfg. Co., Orange, Mass.
- Advance Mfg. & Tool Co., 1344 St. Clair Ave., S. E., Cleveland, O.
- Advance Tool Works, 2300 Warren Ave., Chicago, Ill.
- Aigne Tool Die & Machine Works, Geo. H., Springfield, O.
- Albany Machine & Tool Co., 1031 Broadway, New York, N. Y.
- Alent Machine Tool Co., Rochester, N. Y.
- Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.
- American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 605.)
- American Tool, Die & Machine Co., 1114-20 E. Tenth St., Indianapolis, Ind.
- American Tool & Mfg. Co., Urbana, O.
- Andis Tool Co., 1218 Washington St., Racine, Wis.
- Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.
- Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
- Atcheson Tool & Die Co., 609-11 N. Fourth St., Columbus, O.
- Atlas Mfg. Co., 125 Water St., New Haven, Conn.
- Ault Engineering Co., Frank, U. B. Bldg., Dayton, O.
- Automatic Machine Co., 1150 W. Second St., Dayton, O.
- B. & B. Mfg. Co., 2255 Lake St., Chicago, Ill.
- B. & W. Tool & Die Co., 102 St. Clair Ave. N. W., Cleveland, O.
- Baldwin Mfg. Co., Sparta, Mich.
- Bay State Machine & Tool Co., 30 Cypress Co., Springfield, Mass.
- Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.
- Bender & Sons, P. J., 87 Frankfort St., New York, N. Y.
- Berggren & Pearson Machine Co., 221-27 Canal Street, New York, N. Y.
- Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.
- Blodgett Engineering & Tool Co., Roosevelt Pk., 14th & Dalselle Sts., Detroit, Mich.
- Blum & Co., Wm., 719 S. 13th St., Newark, N. J.
- Bond Machine Co., 315-25 W. Fifth St., Wilmington, Del.
- Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
- Bowen Machine Co., Geo. F., 109-11 Tichenor St., Newark, N. J.
- Bowling Green Die & Tool Co., 535 E. Wooster St., Bowling Green, O.
- Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.
- Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.
- Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.
- Bridgeport Engineering Co., Bridgeport, Conn.
- Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
- Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.
- Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.
- Brock, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.
- Brubaker & Bros., W. L., 50 Church St., New York, N. Y.
- Buerk Tool Works, 33 Pearl St., Buffalo, N. Y.
- Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.
- Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.
- Burgess Machine Co., 45 Chestnut St., New Haven, Conn.
- Capital Die, Tool & Machine Co., 619-21 N. Fourth St., Columbus, O.
- Capital Tool & Die Works, 1100 Oakdale Ave., Chicago, Ill.
- Carde Stamping & Tool Co., West Side, Saginaw, Mich.
- Carpenter Mfg. Co., E. W., 515 Union Ave., Bridgeport, Conn.
- Carroll Engineering Co., Dayton, O. (See page 721.)
- Cartwright Die & Tool Co., 2962 Hart Ave., Detroit, Mich.
- Central Machine Works, 19 Church St., Worcester, Mass. (See page 611.)
- Central Machine Works, 1911 N. 13th St., St. Louis, Mo.
- Central Tool & Die Co., 501 E. Third St., Dayton, O.
- Challenge Gauge & Tool Co., 16-22 W. South St., Indianapolis, Ind.
- Chester Die Sinking & Machine Co., Chester, Pa.
- Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.
- City Engineering Co., Beaver Power Bldg., Dayton, O.
- Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.
- Cleveland Steel Tool Co., 550 E. 32nd St., Cleveland, O.
- Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
- Collamer Machine Works, 1214 E. 153d St., Cleveland, O.
- Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.
- Columbus Die, Tool & Machine Co., 955 Cleveland Ave., Columbus, O.
- Connerly Machine & Tool Co., 56 Harrison Ave., Springfield, Mass.
- Cooney-Dunn Co., 72 Grand St., New York, N. Y.
- Cotton, H. W., Woolworth Bldg., New York, N. Y.
- Craddock, Edward S., 221 E. 144th St., New York, N. Y.
- Craftsman Tool Co., Conneaut, O.
- Criterion Tool & Engineering Co., 501 E. Third St., Dayton, O.
- D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.
- Dan Tool Co., 3925 Montrose Ave., Chicago, Ill.
- Day, Geo. P., 21 Haverhill St., Boston, Mass.
- Dayton Irrigation Co., 261-63 High St., Dayton, O.
- Dayton Tool Co., New Dickey Bldg., Dayton, O.
- Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.
- Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich.

Everything is listed under the NOUN or principal word



Roof 16 Overhead Valve Equipment for Ford and Dodge Motors. Fastest in the world. Doubles the value of Your Truck. Will climbing for touring cars beyond your wildest dreams.

LAUREL POWER SPECIALTIES FOR FORD AND DODGE MOTORS

Sixteen valve cylinder heads. Racing gears. Racing bodies. Racing radiators. Worm and gear steering gears. 4-speed transmissions. Light pistons. Roller bearings. High-speed camshafts. Parts for underslung chassis. Counter balances. Racing carburetors. Racing magnetos.

Write for illustrated catalogue on the above and other parts for Ford and Dodge Motors

THE LAUREL MOTORS CORP.
ANDERSON, IND.

The New Rex Headlight Control "The Perfect Road Gentleman"



HERE
IT IS

AT YOUR
FINGERTIPS

Just touch the lever on your steering column and regulate your lights gradually to any desired degree. Applicable to all cars.

**IT SAVES ENERGY, LIFE
OF BATTERY AND LAMPS**

Retail Price \$12.50

MANUFACTURED AND GUARANTEED BY
REX MANUFACTURING CO.
FOND DU LAC, WISCONSIN

Wm. C. Merrill Company
INCORPORATED

United States Distributors

Security Bldg.

Milwaukee, Wis.



BENTEL

Tonneau

WIND DEFLECTORS

Patented

Permit conversation between the two seats, while giving complete protection to those riding in the rear seat. Strongly made, handsomely finished and easily attached.

Dealers and Jobbers write

THE ROBERT THOMPSON CO.

Manufacturers

1015 South Grand Ave., Los Angeles, Cal.

**KELLER-MADE
MASTER-BUILT**

Special Tools

Designers and Contract Manufacturers Light Machinery & Machine Parts
GAUGES, JIGS, FIXTURES, PUNCHES, DIES AND SPECIAL TOOLS
for the Economical Production of Interchangeable Machine Parts.

Send us Your Specifications for Estimate

KELLER PNEUMATIC TOOL COMPANY
GRAND HAVEN • MICHIGAN • U.S.A.

Please mention The Automobile Trade Directory

DIES, JIGS, TOOLS and FIXTURES (Continued)

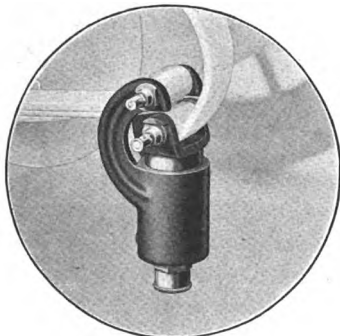
- Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.
- Dimler-Himes Tool Co., Third & Canal Sts., Dayton, O.
- Dodge Tool Co., 721 Main St., Grinnell, Iowa.
- Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.
- Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
- Dover, George W., Eddy St. & Thurbers Ave., Providence, R. I.
- Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
- Dunner Machine Co., 220 Centre St., New York, N. Y.
- Duplex Machine Co., 93 Lafayette St., Newark, N. J.
- E. H. Machine Co., 234 Maple St., Weehawken, N. J.
- Eagle Engineering Co., Springfield, O.
- Elite Machine & Tool Works, 320 W. 19th St., New York, N. Y.
- Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
- Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.
- Eureka Tool & Machine Co., 306 Market St., Newark, N. J.
- Eveready Mfg. Co., 80 Boylston St., Boston, Mass.
- Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.
- Fairbanks-Schock Co., 2353 University St., Minneapolis, Minn.
- Fallon Machinery Co., 31 Marshall's Wharf, Lynn, Mass.
- Farrell & Stoneham Engineering Co., Mutual Home Bldg., Dayton, O.
- Federal Tool & Machine Co., 24 Scott St., Newark, N. J.
- Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.
- Franklin Die Tool Co., Columbus, O.
- Franklin Machine & Tool Co., Springfield, Mass. (See page 631.)
- Frostholm Bros., 1809 Park St., Syracuse, N. Y.
- Fulton Machine Tool Co., 1422 Fulton St., Chicago, Ill.
- G-H-P Mfg. Co., 129 N. Main St., Providence, R. I.
- Gaeke Engineering Co., Dayton, O.
- Geer Machine Works, Wm. E., 112 Summit Ave., (E. Liverpool) Liverpool, O.
- Gem City Machine Co., 436 E. First St., Dayton, O.
- Gem Snap Fastener Co., 2349 Summerfield St., Brooklyn, N. Y.
- General Machine & Mfg. Co., 640 Iranston Ave., Bridgeport, Conn.
- General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.
- General Ordnance Co., 2 W. 43d St., New York, N. Y.
- General Stamping & Mfg. Works, 1652 W. Belmont Ave., Chicago, Ill.
- Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.
- Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
- Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
- Gnome Machine & Tool Co., 820 Livingston St., Elizabeth, N. J.
- Goode Machine Co., 315 Union Park Ct., Chicago, Ill.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Grant Mfg. & Machine Co., 18 Stillman Ave., Bridgeport, Conn.
- Great Lakes Pressed Steel Corp., 1400 Niagara St., Buffalo, N. Y.
- Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.
- H. L. & W. Sales & Mfg. Co., 2755 W. Fourth St., Detroit, Mich.
- Hammamund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
- Hampden Tool Co., 238 Dwight St., Springfield, Mass.
- Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.
- Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.
- Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.
- Hearn Machine Works, J. C., Columbus, O.
- Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.
- Hergl Mfg. Co., Bridgeport, Conn.
- Hinman, A. T., 628 Race St., Philadelphia, Pa.
- Holmes Special Tool Co., 33 Canal St., New Haven, Conn.
- Holm's Mfg. Co., Fairfield & Racine Aves., Kenosha, Wis.
- Holmes Special Tool Co., 38 Canal St., New Haven, Conn.
- Horak Tool & Die Works, 1027 N. Hamlin Ave., Chicago, Ill.
- Horat & Co., Lafayette, Ind. (See page 1035.)
- Hub Engineering & Machine Co., Bound Brook, N. J.
- Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.
- Iles Mfg. Co., E. W., Shelton, Conn.
- Industrial Tool, Die & Engineering Co., 322 E. Fifth St., Dayton, O.
- International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.
- Iroquois Tool & Stamping Co., 909-17 Genesee St., Buffalo, N. Y.
- J. C. H. Automatic Machine Works, 2434 N. Fairhill St., Philadelphia, Pa.
- Jacobsen Mfg. Co., 15th & Clark Sts., Racine, Wis.
- Jensen & Co., O. C., 1922 Park Ave., New York, N. Y.
- Jewelers Toolmaking Co., 220 Eddy St., Providence, R. I.
- Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.
- Johnson Tool Co., 197-99 Eddy St., Providence, R. I. (See page 1011.)
- Joliet Die & Tool Co., Joliet, Ill.
- Jonas, Mark W., 53rd St. & Lansdowne Ave., Philadelphia, Pa.
- Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for A. H. Petersen Mfg. Co., Milwaukee, Wis.) (See page 343.)
- Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.
- Kanco Corp., 34 Barclay St., New York, N. Y.
- Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.
- Keavaney & Son, W. R., 185 Bunker Hill Rd., Waterbury, Conn.
- Kell, Hock & Co., 354 Mulberry St., Newark, N. J.
- Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word

NASH Shock Absorbers

For Ford and Dodge Cars

**Reduce
Upkeep**

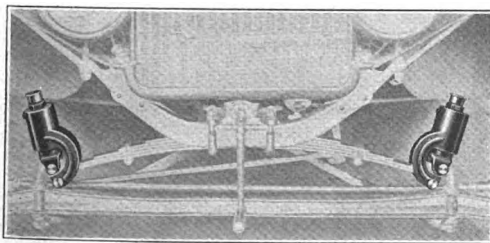


**Bring Road
Comfort**

For DODGE Cars

Absorb all shocks and rebounds. Eliminate all side sway. Add appearance and distinction. Easily and quickly installed without changing any part of the car. Best material and workmanship. Absolutely guaranteed.

**Ease
Every
Motion**



**Lengthen
Life of
Car**

For FORD Cars

Your jobber has them or can get them for you
For detailed information, write

**NASH SHOCK ABSORBER COMPANY
INDIANAPOLIS**

U. S. A.

Please mention The Automobile Trade Directory

DIES, JIGS, TOOLS and FIXTURES (Continued)

- Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 339.)
- Keystone Production & Mfg. Co., 1335 W. 22nd St., Chicago, Ill.
- Kickhafer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis. (See page 891.)
- Kilm-Bowen Machine Co., 146 Colt St., Irvington, N. J.
- King Works, 7350 St. Aubin Ave., Detroit, Mich.
- Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.
- Koehler Mfg. Co., Marlboro, Mass.
- Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
- L. & L. Mfg. Co., 134 High St., Newark, N. J.
- L. T. L. Tool Co., 1320 Woodruff Ave., Rockford, Ill.
- La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.
- La Crosse Pattern Works, 907 S. Front St., La Crosse, Wis.
- Lansing Stamping Co., Lansing, Mich.
- Larned Tool & Die Co., 1326 E. Woodbridge St., Detroit, Mich.
- Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.
- Levy, Benj., 355 W. Broadway, New York, N. Y.
- Liberty Die, Tool & Machine Co., Columbus, O.
- Liberty Electric Co., 97 Haverhill St., Boston, Mass.
- Liberty Tool Co., 577 S. Tenth St., Newark, N. J.
- Liberty Tool & Gauge Works, 333 Bernon St., Woonsocket, R. I.
- Lidseen, Gustave, 332-40 S. Central Ave., Chicago, Ill.
- Lincoln Machine Co., 1065 Main St., Pawtucket, R. I.
- Linden & Co., Providence, R. I. (See page 827.)
- Lindstrom Die, Tool & Gauge Works, L., 50 Silliman St., Bridgeport, Conn.
- Link Tool & Machine Co., 176-82 Worth St., New York, N. Y.
- Loeffler & Co., H., 297 Washington St., Newark, N. J.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.
- Luers Bros. Machinery & Tool Co., Maple & Rivard Sts., Detroit, Mich.
- Lynn Machine & Srew Co., 496 Washington St., Lynn, Mass.
- McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
- McCuen & Graves, 4100 Ravenswood Ave., Chicago, Ill.
- McCulloch Mfg. Co., 216 High St., Boston, (See page 471.)
- McGuire Tool & Die Works, J. J., 316 Livingston St., Elizabeth, N. J.
- McIntyre Machine Works, 78 Grove St., Hartford, Conn.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.
- Marvin Mfg. Co., W. E., Urbana, O.
- Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 387.)
- Maute Sons Die & Tool Works, J., 21-23 Kane St., Buffalo, N. Y.
- Mehl Machine Tool & Die Co., 547 E. First Ave., Roselle, N. Y.
- Metal Parts Mfg. Co., 1084 E. 152d St., Cleveland, O.
- Metal Products Mfg. Co., 241-43 W. 23d St., New York, N. Y.
- Meyers Co., W. F., 13th & J Sts., Bedford, Ind.
- Miami Tool & Die Co., St. Paul St. & E. Huffman Ave., Dayton, O.
- Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.
- Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.
- Middletown Fire Arms Specialty Co., 22 Warwick St., Middletown, Conn.
- Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.
- Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 951.)
- Milwaukee Metal Working Co., 322-23 Clinton St., Milwaukee, Wis.
- Modern Tool & Machine Works, 244-50 Mulberry St., Newark, N. J.
- Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O. (See page 357.)
- Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.
- Moline Pressed Steel Co., Fifth St., East Moline, Ill.
- Monarch Tool & Machinery Co., 522 S. Clinton St., Chicago, Ill.
- Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.
- Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.
- Moody Tool Works, Chas. J., 60 River St., Elgin, Ill.
- Moore & Co., 301 W. Grand Ave., Chicago, Ill.
- Moore-Eastwood Mfg. Co., Dayton, O.
- Moore Tool & Machine Co., Newark, O.
- Moran Machine Co., John F., 103-07 Grape St., Syracuse, N. Y.
- Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.
- Murchev Machine & Tool Co., 951 Porter St., Detroit, Mich.
- Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.
- National Automatic Tool Co., S. Seventh & N. Sts., Richmond, Ind.
- National Indicator Co., 852 Vernon Ave., Long Island City, N. Y.
- National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.
- National Production Co., Benson & Bellevue Sts., Detroit, Mich.
- National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo.
- Neff & Morse, 904 Washington St., Boston, Mass.
- Nelson Tool Co., 732 E. 142d St., New York, N. Y.
- Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.
- New Process Specialty Co., 230-32 Hanover St., Milwaukee, Wis.
- Newark Tool & Die Co., 20-22 Lawrence St., Newark, N. J.
- Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.
- North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.
- North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
- Parker Machine Co., 221 High St., Boston, Mass.
- Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
- Pearce Co., Fred'k., 13-20 Rose St., New York, N. Y.
- Peterson Mfg. Co.—See Jonas, C. N. & F. W.
- Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.

Everything is listed under the NOUN or principal word

The Hole Shooter has a capacity of $\frac{3}{4}$ " in wood and $\frac{5}{8}$ " in steel. For drilling jobs of this size there is no handier or huskier tool made.

Weights only
 $3\frac{3}{4}$ Pounds

A Handy High-Speed Drill for Every Automobile Worker

Garagemen, automobile trimmers and body-builders find the $3\frac{3}{4}$ -pound Hole Shooter "made to order" for dozens of small drilling jobs that are hard, awkward work with an 8 to 10-pound power drill or a hand tool. This handy electric drill is easier on the wrist and does more accurate work faster, with a big saving in drill points.

For installing clocks, speedometers or cigar lighters on instrument boards; for attaching robe-rails or sun visors; for equipping enclosed cars with spot-lights or mirrors, The Hole Shooter is a big time-saver. Just the tool for body work, such as fastening upholstery moulding, attaching locks, hinges and curtains, or installing vanity cases or flower vases.

The Hole Shooter is a guaranteed, standardized tool—designed right, beautifully made, aluminum cased. Lasts longer than heavier, higher-priced drills. List price, \$42.00.

To save time, order The Hole Shooter direct, to be billed through your jobber.

A. H. PETERSEN MFG. COMPANY
MILWAUKEE, WISCONSIN

Specifications

Capacity, 0 to $\frac{3}{8}$ " in steel;
0 to $\frac{1}{4}$ " in wood.

Weight, $3\frac{3}{4}$ pounds.

Motor, Universal type; Speed,
1600 R.P.M.; 110 or 220 volt.

All parts interchangeable.

Offset Spindle.

Gears, Nickel alloy steel, heat-treated by special Petersen process.

Centrifugal Fan keeps motor cool.

Cutler-Hammer Push Button Switch, conveniently located in upper part of grip.

Equipped with Jacob's Chuck.

Price, complete with 10-foot cord,
\$42.00 list.

THE HOLE SHOOTER

C. N. & F. W. JONAS Sales
Representatives
608 So. Dearborn St. CHICAGO, ILL.

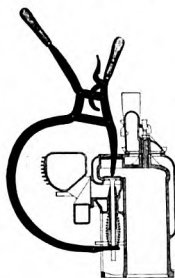
Literature on Request

C. N. & F. W. JONAS

MAPSON'S

"PERFECTION" VALVE LIFTER

Makes a Friend
for Life of
every Mechanic who
gives it a test



Quick, positive, effortless action. Overhead manifolds, dashes and piping do not interfere. Imposes no side strain on valve stem. Adjustable jaws fit all sizes of spring retainers.

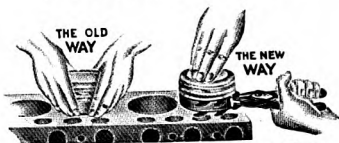
Standard model, \$7.50
Heavy Duty model, \$9.00

Mack Truck model, \$12.00
Special Models on Order

PORTER, INCORPORATED
San Diego, California

The VICTORY Piston Ring Compressor

Fills a Long Felt Want in Every Garage



List Price, \$2.00

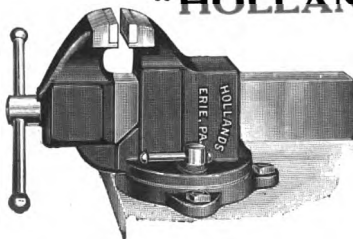
Saves Time — Saves Rings —
Inserts pistons into either top or bottom of cylinder in ten seconds without danger of ring breakage. Instantaneously adjustable to all size rings from 2 3/4 inches to 9 inches. Used on any type of motor.

DEALERS

This tool is sold by all Accessory Jobbers

The Victory Ring Compressor Co., Inc.
Grand Rapids, Michigan
Sales Office: 1462 S. Wabash Ave., Chicago

"HOLLANDS" VISES



Holland's Vises—for strength, durability and firm gripping power—are superior to all other makes, and every tool bearing the Holland's name is fully guaranteed.

Manufactured of a high-grade composition that is especially adapted for the hard service to which vises are subjected and, to doubly insure against possible breakage, all points of most strain are heavily reinforced.

The jaws of our vises are faced with steel made to a special formula, to insure a tough, hard jaw that positively will not chip.

HOLLANDS MFG. COMPANY
ERIE, PA.

"VICTOR" BOLT and RIVET CLIPPER



Tool Steel Jaws all machined and will interchange. Rubber Buffers between the handles take the jar from the wrist as well as protecting the operator's hand.

Sizes of "Victor" Clippers

No.	Size	List
00 for	1/4" Bolts..	\$2.50
0 for	5/16" Bolts..	3.75
1 for	3/8" Bolts..	5.00
2 for	1/2" Bolts..	7.00
3 for	5/8" Bolts..	9.00

ROBERTS MFG. COMPANY
Boston, Mass.

C. N. & F. W. JONAS

Sales Representatives

608 SO. DEARBORN ST.
CHICAGO - - ILL.

Atlanta
San Francisco
Dallas
Winnipeg, Can.

Los Angeles
New York
Seattle
Kansas City

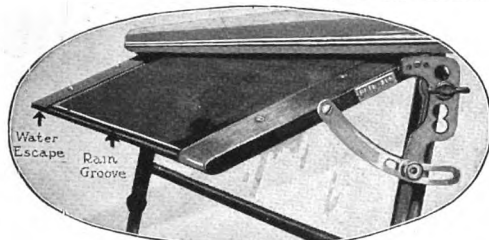
C. N. & F. W. JONAS

NONBREAKABLE "RAIN-SUN" NOISE PROOF

(Trade Mark)

RAIN AND SUN SHIELD

(PATENTED NOV. 30, 1920)



The Shield with a Reputation

**FITS ANY CAR
OPEN OR ENCLOSED**

Made of Highest Quality Auto Body Steel, Finished in Pure Baked Black Enamel Outside, Rich Velvet Green Beneath, Adjustable to Any Angle by Heavy Brass Braces, Nickel Plated.

Made in Three Sizes, 3-inch Length Adjustment in Each. Extra Brackets for Either Open or Enclosed Car—List, 40c per Pair.

LIST PRICE, \$12.00 ANYWHERE IN U. S.

RAIN-SUN VISION SHIELD CO., Manufacturers

LOS ANGELES, CALIFORNIA



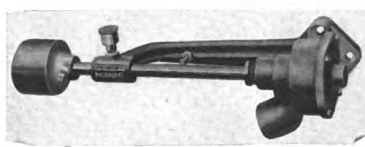
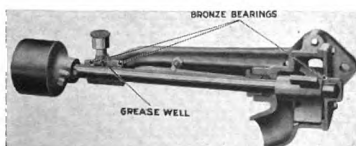
THE PERFECT COOLING SYSTEM FOR FORD MOTORS

Note the well-developed design of the Milwaukee Circulating Water Pump as shown in the illustration. The steel shaft runs in three bronze bearings, lubricated by a large grease well. The bronze packing assures a water-tight fit and every pump is tested under thirty pounds pressure before leaving the factory.

The Milwaukee is the last word in a forced water circulation system for the Ford motor. It can be installed in thirty minutes' time—no drilling or cutting or changing of hose. Supplied with special Gilmer Fan Belt; models '16 and earlier require a 30" belt; '17 to '20 a 32" belt and models '21 a 34" belt. Unless otherwise specified a 32" belt will be supplied.

List Price, complete, \$12.00

Additional Gilmer Fan Belts, 75c



Sold thru the Jobbing Trade

MILWAUKEE CIRCULATING PUMP CO.

387-9 Tenth St.

Milwaukee, Wis.

C. N. & F. W. JONAS

Sole Representatives

608 So. Dearborn St.

CHICAGO, ILL.

Atlanta
San Francisco
Dallas
Winnipeg, Can.

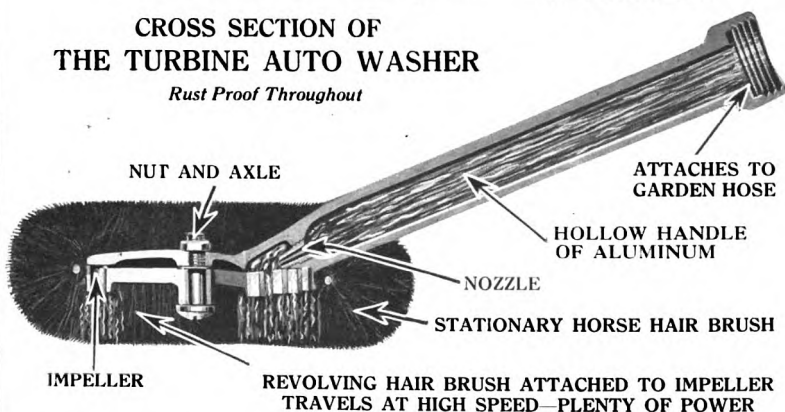
Los Angeles
New York
Seattle
Kansas City

C. N. & F. W. JONAS

"TURBINE" AUTO WASHER

CROSS SECTION OF
THE TURBINE AUTO WASHER

Rust Proof Throughout



MFG. BY

TURBINE AUTO WASHER CO., Three Rivers, Mich.

—CLAYPOOL—

AXLE SHAFTS FOR REPLACEMENT

For All Makes of Cars



PARTIAL LIST

Our axles are made of the highest S. A. E. specifications of which there are three and are guaranteed as such. The code number shown at the extreme left of listing, is stamped on the center of each shaft. Same shafts fit several makes of cars, and this can be determined by the code number.

All shafts are interchangeable, guaranteed to be correct as to size and workmanship and at least the equal of the factory product in every respect. They are accurately machined and ground and subjected to process inspection after each operation, as well as rigid final inspection, then carefully oiled to prevent rusting, and then packed.

Write for Complete List and Trade Price

CLAYPOOL MACHINERY WORKS, Claypool, Indiana

C. N. & F. W. JONAS

Sales Representatives

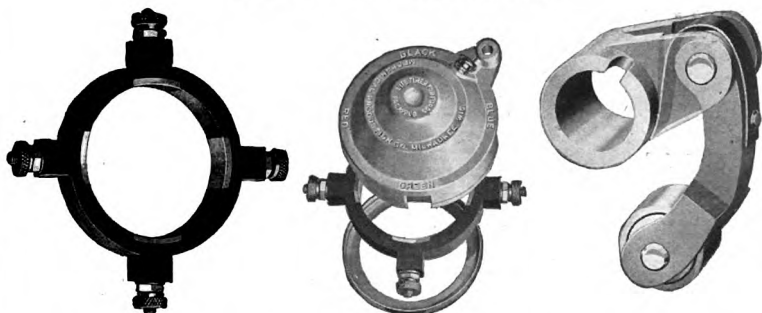
**608 SO. DEARBORN ST.
CHICAGO, ILL.**

Atlanta
San Francisco
Dallas
Winnipeg, Can.

Los Angeles
New York
Seattle
Kansas City

C. N. & F. W. JONAS

LIFE-TIMER For FORDS



The Life-Timer has a specially constructed fibre contact ring which is quickly detachable from the timer case complete, enabling the user to renew the timer, after long service, at a minimum cost by replacing it with a new fibre contact ring. This can be done without tools in a few minutes.

A special construction of fibre ring makes short circuit between the contacts and the timer case impossible because the contacts are set independently in this detachable ring, and in no way do they depend upon special insulation to avoid ignition trouble.

The Life-Timer case is heavily made and is marked on the outside for the different colored wires so that should this timer be detached for work about the engine, it can be reassembled correctly and quickly without tracing out the electric circuits for the proper wire.

The roller bracket arm is made of bronze which has strength and is machined to accuracy. It carries a specially designed ball bearing roller of large dimension, ground on the surface to obtain the smoothness of action and accuracy.

There is no part of this timer but what is built to an ideal, and from the standpoint of service per year, it can be operated at a much less cost than any other timer at any price which we have seen.

The Life-Timer is adaptable to Ford touring cars, trucks, and tractors. The list price is \$3.50 and the fibre ring may be replaced for \$1.25.

JOBBERS WRITE FOR ATTRACTIVE DISCOUNTS

Manufactured by

MECHANICAL PRODUCTION COMPANY
MILWAUKEE WISCONSIN



C. N. & F. W. JONAS

Sales Representatives

608 SO. DEARBORN ST.
CHICAGO, ILLINOIS

Atlanta
San Francisco
Dallas
Winnipeg, Can.

Los Angeles
New York
Seattle
Kansas City

C. N. & F. W. JONAS

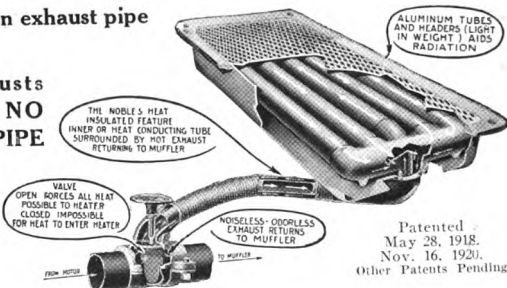
The Noble Auto Heater

"It's Heat Insulated"

No loss of heat between exhaust pipe and heater.

Heater gas exhausts through muffler. NO EXTRA EXHAUST PIPE USED.

HIGHEST EFFICIENCY AT ALL TIMES.



Patented
May 28, 1918.
Nov. 16, 1920.
Other Patents Pending

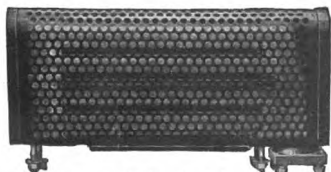
FURNISHED IN THE FOLLOWING TYPES



Style "B," Type "B," $9\frac{1}{2}" \times 16\frac{1}{2}"$\$30.00
Style "B," Type "BB," $9\frac{1}{2}" \times 15"$ 30.00
Style "B," Type "DB," $9\frac{1}{2}" \times 16\frac{1}{2}"$ 45.00
Types DB and DL for Dual Exhaust Motors.



Style "B," Type "L," $8\frac{1}{2}" \times 25\frac{1}{2}"$\$35.00
Style "B," Type "DL," $8\frac{1}{2}" \times 25\frac{1}{2}"$ 45.00



Style "A," Type "A," $15\frac{1}{4}"$ long.....\$30.00
Style "A," Type "D," $23\frac{1}{4}"$ long..... 32.50
Style "A," Type "DD," $29\frac{1}{4}"$ long..... 35.00



Style "C," Type "C," $18\frac{3}{4}"$ long.....\$35.00
Style "C," Type "E," $25"$ long..... 40.00
Style "C," Type "EE," $30"$ long..... 45.00

Above prices are list and include all necessary fittings and 4 ft. of rack size flexible tubing.

JOBBERs—Write for attractive discounts. Comparison will prove the Noble Heater is the best and most efficient obtainable.

Manufactured by

THE NOBLE HEATER COMPANY
Fort Wayne, Ind., U. S. A.

C. N. & F. W. JONAS

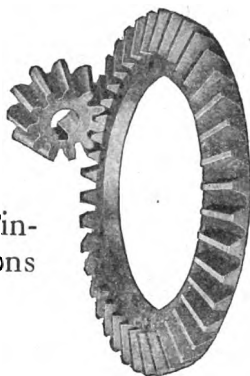
Atlanta
San Francisco
Dallas
Winnipeg, Can.

Sales Representatives
608 SO. DEARBORN ST.
CHICAGO, ILLINOIS

Los Angeles
New York
Seattle
Kansas City

GUARANTEED GEARS

for
Maxwell Chevrolet
and Ford



Ford and Chevrolet Gears and Pinions are packed separately in cartons

Guaranteed Unconditionally

Manufactured by
WEEKES-HOFFMAN CO.
Syracuse, N. Y.

Distributed by
SAMUEL WEINBERG
Scranton, Pa.

Ask Your Jobber for WEEKES-HOFFMAN GEARS — None Better — Priced Right

Speaking of Equipment

Every one of your customers who owns a wrench kit will want a WIZARD on sight because it does just that—replaces a whole set of open end wrenches.

Ten Standard Sizes Instantly Available All in One Wrench

*Instantly
Adjustable to
Any One of
Ten Sizes*

Just lift the jaw, slide to desired size and drop into mesh.

Ten Openings: $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{11}{16}$ ", $\frac{13}{16}$ ", $\frac{15}{16}$ ", $1\frac{1}{16}$ ".

10 U. S. Standard Sizes.

5 S. A. E. Standard Sizes.

6 U. S. Standard Set Screw Sizes.

4 Cap Screw Sizes.

Every Opening Absolutely Positive.

C. E. WAKEFIELD

Sole Manufacturers
Wrench Manufacturers for Over Thirty Years
WORCESTER, MASS., U. S. A.

We are now located in our new quarters at

137 West 56th Street
NEW YORK CITY

where with enlarged facilities we will be better able to take care of your future requirements in our line of Automotive Equipment:

Whitney Roller Chains

Whitney Silent Chains

Sprockets

Chainolene

(Chain Lubricant)

Thermoid Brake Lining

(for trucks)

Multibestos Brake Lining

W. E. Townsend Company, Inc.

TELEPHONE CIRCLE 2660

Please mention The Automobile Trade Directory

DIES, JIGS, TOOLS and FIXTURES (Continued)

- Pittsburgh Reinforced Bracing & Machine Co., 3535 Liberty Ave., Pittsburgh, Pa.
 Plum & Little, 30 N. Water St., Rochester, N. Y.
 Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.
 Power Vosburg Co., 445 W. Larned St., Detroit, Mich.
 P-R-E-C-I-S-E Mfg. Corp., Rochester, N. Y.
 Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.
 Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.
 Producers Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
 Production Engineering Co., 212 Centre St., New York, N. Y.
 Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
 Proviao Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.
 Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.
 Queensboro Tool & Die Co., 136 West Ave., Long Island City, N. Y.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
 Redkin, Ekstrom & Co., Rockford, Ill.
 Reliable Tool Co., 33-35 Ellis Ave., Irvington, N. J.
 Reliance Die & Stamping Co., 515 N. La Salle St., Chicago, Ill.
 Rex Machine & Tool Co., 24 Scott St., Newark, N. J.
 Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
 Richard Bros. Die Works, 1560-74 Milwaukee St., E., Detroit, Mich.
 Riverside Machine Co., Front & Penn Sts., Chester, Pa.
 Robbins, Gamwell & Co., Pittsfield, Mass.
 Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.
 Rockford Drilling Machine Co., Foot Catherine St., Rockford, Ill.
 Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.
 Root Co., B. M., 30-36 Jefferson Ave., York, Pa.
 Ross Machine Co. (Wollaston), Quincy, Mass.
 S-P Mfg. Co., 873 E. 72d St., Cleveland, O.
 S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
 Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.
 Saunders Co., James, 24-26 N. Canal St., Dayton, O.
 Schroeder Bros. Mfg. Co., 102 Brook St., Torrington, Conn.
 Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.
 Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.
 Shipman Machine Co., 218 Summer St., Boston, Mass.
 Simplex Tool Co., Social St., Woonsocket, R. I.
 Sloan & Chase Mfg. Co., 351 Sixth Ave., Newark, N. J.
 Smith Mfg. Co., W. F., 157 Stratford Ave., Bridgeport, Conn.
 Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.
 Sommer-Adams Co., 2994 E. 55th St., Cleveland, O.
 Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.
 Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.
 Standard Electric Mfg. Co., 126 South St., Newark, N. J.
 Star Tool & Mfg. Co., 4520 Lexington St., Chicago, Ill.
 Steber Machine Co., 713 First St., Utica, N. Y.
 Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.
 Stelman & Co., Wm., 297 Washington St., Newark, N. J.
 Steiner Bros., Haller St., Lima, O.
 Stemco Engineering Co., Second & Webb Sts., Dayton, O.
 Sterling Cork & Seal Co., 1613 Oakwood Ave., Toledo, O.
 Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.
 Sterling Tool & Machine Co., 205-09 W. 19th St., New York, N. Y.
 Sterns Aero Parts Co., 203 St. Claire Ave., N. E., Cleveland, O.
 Stewart-Skinner Co., 17 Green St., Worcester, Mass.
 Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill.
 Superb Mfg. Co., Monticello, Ind.
 Superior Mfg. Co., 1109 Race St., Philadelphia, Pa.
 Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.
 Superior Tool & Engineering Co., 611 N. Capital Ave., Indianapolis, Ind.
 Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
 Swissgabel Mfg. Co., C. F., Dayton, O.
 T. & D. Mfg. Co., 207 Canal St., New York, N. Y.
 Taft-Pierce Mfg. Co., Woonsocket, R. I.
 Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
 Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
 Thurston Mfg. Co., 140 Benedict St., Providence, R. I.
 Tisch Machine Tool & Die Works, 452-54 Spring St., Elizabeth, N. J.
 Tool & Auto Products Co., St. Clair & E. 49th St., Cleveland, O.
 Tool & Machine Products Co., Waldo St., Newark, O.
 Triangle Tool Co. of Erie, 162 E. Eighth St., Erie, Pa.
 Turner Novelty Co., John C., Dayton, O.
 Twin City Die & Tool Works, 4523 Sixth Ave., Rock Island, Ill.
 Ulmer Co., J. C., 1791 E. 28th St., Cleveland, O.
 Ultimate Machine Works, 209 Centre St., New York, N. Y.
 Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
 United Machine Works, 55-57 W. Third St., New York, N. Y.
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 Universal Machine & Tool Co., Canton, O.
 Up-To-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. (See page 827.)
 Valley Engineering Co., 427 Valley St., Dayton, O.
 Varick Machine & Tool Works, 143 Varick St., New York, N. Y.
 Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
 Vulcan Tool Co., 418 E. First St., Dayton, O.
 W. B. W. Tool Co., Main & Bruen Sts., Dayton, O.
 Wade-American Tool Co., 49-59 River St., Waltham, Mass.
 Wayne Tool Co., 642 Catherine St., Detroit, Mich.

Everything is listed under the NOUN or principal word



"AUTOMOTIVE MOTOR SERVICE"

Cylinder Grinding
Grank Shaft Grinding
New Pistons
Piston Rings

SUNDERLAND
MACHINE SHOPS
OMAHA, U. S. A.



Cooling Systems for TRACTOR TRUCK PLEASURE CAR

S-J Pure Copper Cores
S-J Sheet Metal Parts

SHOTWELL - JOHNSON
MANUFACTURERS

MINNEAPOLIS - - MINN.

Watch this space for New Electrical Wiring Manual

IS THE most complete and comprehensive manual for use of the Auto-electrician.

It contains charts and wiring instructions for every model of every automobile in use.

Published in loose-leaf form, and our revision sheets assure the user of having all changes in electric systems always available.

SERVICE ENG. CO.
615 COMMERCIAL ST.
SAN FRANCISCO CALIF.

WE MANUFACTURE FOR

Battery Factory and Jobber:

All Types of Bronze Clamp Terminals.
Terminal Plugs.

Terminal Plug Screws, Solid Brass or Steel (Brass-Plated) with or without Lead Head.

Production Molds for Putting Lead Head on Screws.

We invite your inquiries on Bronze Clamps (of Special Design) or Small Castings for any purpose.

We have an attractive Sales Proposition for Service Station Jobbing Houses.

**Service
Station Supply
Company**

WILKINSBURG STATION
PITTSBURGH, PA.

Please mention The Automobile Trade Directory

DIES, JIGS, TOOLS and FIXTURES (Continued)

Weber & Scher Mfg. Co., 24 Scott St., Newark, N. J.
 Weiss, L. T., 295 Taaffe Pl., Brooklyn, N. Y.
 West Michigan Machine Tool Co., 231 Ionia Ave., Grand Rapids, Mich.
 West & Dodge Co. (Faniel Sta.), Boston, Mass.
 Western Tool & Machine Works, 127 N. Wells St., Chicago, Ill.
 Whitley Co., A. H., 209 Cranston St., Providence, R. I.
 White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.
 Whiting & Comstock, Hartford, Conn.
 Wilcox Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 207.)
 Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.
 Woody Machine Works, 738-800 W. Washington St., Indianapolis, Ind.
 Wright-Fisher Engineering Corp., 4087 E. Grand Blvd., Detroit, Mich.
 York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
 Young & Franklin, Industrial Bldg., Syracuse, N. Y.
 Zarem & Rose, 174 Centre St., New York, N. Y.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)
 Zuhre, Henry, 200 William St., New York, N. Y.
 Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

DIES, SCREW CUTTING—See Tape and Dies

DIES, STAMPING—See Dies, Jigs, Tools and Fixtures

DIFFERENTIAL ASSEMBLY PLATES FOR FORDS—See Plates, Differential Assembly

DIFFERENTIAL GEARS—See Gears, Differential

DIFFERENTIALS, COMPLETE—See Gears, Differential

DIMMERS, Glare

(Colored Glass or Celluloid Attachment for Wind shield to dim the glare from approaching headlights)

Auto Light Glare Shield Co., 1144 Broadway, Denver, Colo. "Barhart."
 Barhart—See Auto Light Glare Shield Co.
 Brett Dimmer Co., A. H., Mason City, Ia.
 Gilbert, Woodland H., Peoples Bank Bldg., St. Paul, Minn.
 Glar-Stop—See Sedgwick Sales Co.
 Glaroscope—See Randall-Faichney Co.
 Nasco—See National Souvenir Co.
 National Souvenir Co., 218-19 N. Cedar St., Owatonna, Minn. "Simplex," "Nasco."
 Portland Sales Co., 566 Commercial St., Boston, Mass.
 Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope."
 Safe-Tee Scope Co., 75 S. Laurel St., Bridgeville, N. J.

Sales Publicity Co., Carlton Ct. Bldg., Buffalo, N. Y.

Sedgwick Sales Co., 1405 Sedgwick Ave., New York, N. Y. (Sole Distributors for Smith "Glar-Stop" Specialty Co., Philadelphia, Pa. "Glar-Stop.") (See page 510.)

Simplex—See National Souvenir Co.

Smith "Glar-Stop" Specialty Co.—See Sedgwick Sales Co.

DIMMERS or SHADES, Headlight

(Diffusing and deflecting lenses or glasses, special shades and reflectors, hoods and screens, two filament bulbs, etc.)

Aderente—See Jay & Dee Specialty Co.

Alvo Mfg. Co., Ashland, O.

Amco—See Art Metal Mfg. Co.

American Mantle Co., Anderson, Ind. "Safety-First."

Ames—See Heinze Electric Co.

Amesbury Bent Glass Co., Amesbury, Mass.

Art Metal Mfg. Co., E. 61st St. & Curtis Ave., Cleveland, O. "Amco."

Atlas Trading & Navigation Co., Monadnock Bldg., San Francisco, Cal. (Sole Distributors for Torrance Glass Co., Los Angeles Cal.)

Auto Glare Remover Co., 161 Massachusetts Ave., Boston, Mass.

Benzer Corp., Myrtle, Webster & Cooper Ave., Brooklyn, N. Y. (See page 317.)

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Full-Ray."

Brett Dimmer Co., A. H., Mason City, Ia.

Brown Reflector, 560 E. Fourth St., Boston, Mass. "Roadwide."

Butterfly—See Sparta Mfg. Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Corning Glass Works, Corning, N. Y. "Conaphore.")

Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Mel-O-Lite."

Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.

Conaphore—See Cassidy Co.

Corning Glass Works—See Cassidy Co.

Cortland Auto Supply Co., 30 Main St., Cortland, N. Y. "Letts."

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. (Distributor for west of Colorado State Eastern Line for "Osgood" Dimmers.) (See page 249.)

Dannenhirsch Co., 1906 W., Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Detroit Right Lens Co., Book Bldg., Detroit, Mich. "Right."

Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.

Dillon Lens & Mfg. Co.—See Pyrene Mfg. Co.

Dim Auto Lite Switch Co., Monroe, Mich.

Divergo—See Rotary Products Co.

Doa Battery & Novelty Co., S. Water St., Kent, O.

Dubuque Glass Co., Jones & Leves Sts., Dubuque, Ia.

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "E-Z-2-C."

Dwelle-Kaiser Co., 237-53 Elm St., Buffalo, N. Y. "Dwellight."

Dwellight—See Dwelle-Kaiser Co.

E-Z-2-C—See Dunn Mfg. Co.

Eclipse—See Vesta Battery Corp.

Eclipse Dimmer Co., 122 Sheridan Sq., East End, Pittsburgh, Pa.

Enemesco—See Northwestern Mirror & Specialty Co.

Everything is listed under the NOUN or principal word



We'll Show You How to Get Your Message Right Before the Buyer

Whether you manufacture automotive products—anything from motor cars to upholstery tacks—or whether you sell them, whether you distribute your goods through jobbers or through dealer and garage owner channels, if business sagacity and the needs of the times argue that this is the logical moment for a direct mailing campaign to give new impetus to your business—then remember that our Special Mailing List Service offers the one method of sales attack in which no ammunition is wasted, in which every shot finds a mark in an interested buyer.

WHAT OUR SERVICE OFFERS

It gives the names of manufacturers of cars, trucks, tractors, airplanes and motorcycles together with the names of all company executives, including engineers and purchasing agents.

It gives not merely the names of concerns interested in the wholesaling of automotive equipment, but shows the territories covered, the number of road salesmen employed, amount of stock carried, whether catalogs are issued, as well as the names of manager and buyer.

It includes a complete list of dealers and garages, with information regarding what cars, trucks or tractors they handle and whether they sell tires and supplies, operate a repair shop, charge electric vehicles, build or repair bodies, do vulcanizing, painting, upholstery.

Moreover, the Mailing List Service is so arranged that campaigns of national scope or such appealing only to certain sections may be conducted with equal facility.

Manufacturers, advertising managers, sales and service executives, in fact every one concerned with automotive merchandising and maintenance should be familiar with the manifold advantages offered by this unique service.

Details Furnished Promptly Upon Request

THE AUTOMOBILE TRADE DIRECTORY

243 WEST 39th STREET

NEW YORK CITY

Please mention The Automobile Trade Directory

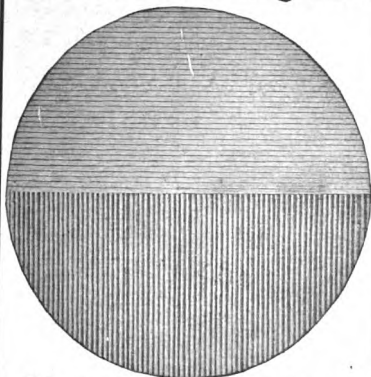
DIMMERS or SHADES, Headlight (Continued)

Eureka-Lunette—See Siraco-Hammond Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Lennon." (See page 243.)
 Filmolens Sales Co., 1926 Ford Bldg., Detroit, Mich. (See page 355.)
 Flemington Cut Glass Co., Main St., Flemington, N. J.
 Flexo Lens Protector Co., Camden, N. J. (See page 617.)
 Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass. "Fractors."
 Fractors—See Fracto Specialty Co.
 Full-Ray—See Bradsto Appliances.
 Glare-Off Co., 30 West St., New York, N. Y.
 Glareless Auto Lens Co., 4531 Ravenswood Ave., Chicago, Ill.
 Glaroscope—See Randall-Faichney Co.
 Glowlite Co., 33 N. High St., Columbus, O.
 Heinze Electric Co., Lawrence St., Lowell, Mass. "Ames."
 Holophane Glass Co., 340 Madison Ave., New York, N. Y.
 Howard Auto Headlight Deflector Co., Detroit, Mich.
 Iowa Optical Co., New London, Ia.
 Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Aderente."
 Johanson, Emil G., 1123 Wells St., Chicago, Ill.
 Kamp Auto Supply Co., 707 Second Ave., S., Minneapolis, Minn. "Thula."
 King—See Flemington Cut Glass Co.
 Kopp's—See Pittsburgh Lamp, Brass & Glass Co.
 L. L. L. D. Mfg. Co., 203 State St., Rochester, N. Y.
 Lancaster Lens Co., 220-26 W. Main St., Lancaster, O. "Star."
 Lee Knight Lens Co., 210 East Ave., Rochester, N. Y.
 Legalite Corporation, 120 Boylston St., Boston, Mass.
 Lennon—See Faw Co.
 Lenslite—See Manufacturers Glass Co.
 Letts—See Cortland Auto Supply Co.
 Liberty—See Macbeth-Evans Glass Co.
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Long Way."
 Long Way—See Long Bros.
 McKee Glass Co., Jeannette, Pa.
 Macbeth-Evans Glass Co., Pittsburgh, Pa.
 Manufacturers Glass Co., 38 S. Dearborn St., Chicago, Ill. "Lenslite."
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Mel-O-Light—See Chicago Eye Shield Co.
 Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.) (See page 339.)
 Mock & Hardy, 111 W. Monroe St., Chicago, Ill. (Sole Distributors for Raylo Dimmer Co., Indianapolis, Ind.)
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)
 Monroe Auto Specialty Co., 203 State St., Rochester, N. Y.
 Multifrax Lens Co., 41 Union Sq., New York, N. Y.
 National—See Smith Glass Co.
 Nevablind Autolight Co., 47-51 Lispenard St., New York, N. Y.
 Noglare Auto Lens Co., 148 Fifth St., Portland, Ore.

No-Glare—See Perrin Mfg. Co.
 No-Glare—See Scatter Light Lens Co.
 No-Glar-On Co., Stone St., Watertown, N. Y.
 North Star—See S. & M. Mfg. Co.
 Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill. "Ene-meso."
 Onlee—See Wickwire Spencer Steel Corp.
 Osgood Lens & Supply Co., Harris Trust Bldg., Chicago, Ill.
 Parrish & Co., S. H., 202 S. Clark St., Chicago, Ill.
 Patton Glare Stop Corp., 741-47 Santa Fe Ave., Denver, Colo.
 Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich. "No-Glare."
 Pittsburgh Lamp, Brass & Glass Co., Liverpool & River Sts., Pittsburgh, Pa. "Kopp's."
 Protection Auto Specialty Co., 1483 Fulton St., Brooklyn, N. Y.
 Punch—See Trieber Co.
 Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y. (Sole Distributors for Dillon Lens & Mfg. Co., Bridgeport, Conn.)
 Rand Reflector Co., 191 Merrimack St., Haverhill, Mass.
 Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope."
 Raydex Mfg. Co., Brackenridge, Pa.
 Raylo Dimmer Co.—See Mock & Hardy.
 Rex Mfg. Co.—See Merrill Co.
 Reynolds & Co., Harry H., 641 E. 39th St., Chicago, Ill. "Sof-Lite."
 Right—See Detroit Right Lens Co.
 Roadlighter—See Shaler Co.
 Roadwide—See Brown Reflector.
 Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Nevablind." (See page 353.)
 Romon Nevablind—See Roberts & Monroe.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 S. & M. Mfg. Co., 2332 S. Michigan Ave., Chicago, Ill. "North Star." (See page 899.)
 Saferlite Lens Co., 220 Fifth Ave., New York, N. Y. (See page 353.)
 Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Safety-First—See American Mantle Co.
 Scatter Light Lens Co., 209 Washington St., Newark, N. J. "No Glare."
 Shaler Co., C. A., 906 Fourth St., Wau-pun, Wis. "Roadlighter." (See pages 353, 1037 and 1047.)
 Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
 Siraco-Hammond Co., Whitehall, N. Y. "Eureka-Lunette."
 Smith Glass Co., L. E. Mount Pleasant, Pa. "National." "Violet Ray."
 Sof-Lite—See Reynolds & Co.
 Sparta Mfg. Co., Grand Rapids, Mich. "But-terfly."
 Standard Corp., Outlook Bldg., Columbus, O. "Sun-Ray."
 Star—See Lancaster Lens Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Stryker Deflector Co., 70 W. Chippewa St., Buffalo, N. Y.
 Sues Glass Co., Eighth & Virginia Sts., Seattle, Wash.
 Sun-Ray—See Standard Corp.
 Sunlite Co., McKinney, Texas.
 Superb Lens Co., 1319 Washington Ave., N., Minneapolis, Minn.

Everything is listed under the NOUN or principal word

Saferlite Deflecting Lens



High projection between 100 and 400 feet ahead, with sufficient spread to cover the traffic width of road.

PRICES

Up to 9" — \$1.00 per Pair

Over 9" — \$1.25 per Pair

Prices in and West of the Rockies 60 cents per pair higher.

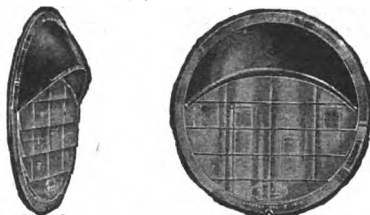
Write for circular and our nearest distributing point.

SAFERLITE LENS COMPANY

220 Fifth Avenue, Room 1714, New York City

MACBETH LENS

AN AUTOMOBILE HEADLIGHT LENS WHICH IS BUILT ON THE SAME FUNDAMENTAL PRINCIPLES OF LIGHT CONTROL AS THE MARVELOUS MACBETH LIGHTHOUSE LENSES.



THE green visor and the scientifically accurate prisms on the front together with the concave recesses on the back eliminate all glare and give long range and side lighting necessary for safe driving. The Macbeth Lens is distinctive—this because of the green visor.

It took four years to develop the Macbeth Lens and it takes 72 hours to manufacture one lens. It has solved the headlight problem.

Macbeth Lenses are made in all sizes to fit standard lamps.

PRICE LIST

All sizes	\$5.25 per pair
Denver and West.....	5.75 per pair
Canada	6.00 per pair
Winnipeg and West.....	6.50 per pair

Macbeth-Evans Glass Company
Pittsburgh



Romon Automobile Accessory Products
Include the Following Principal Items:

Romon Automatic Chassis Lubricator which automatically oils under pressure all chassis bearing points, thereby displacing all dope cups, grease, chassis squeaks and rattles.
The Romon Kabulock. A cable lock with a tremendous sale. Securely protects tires, robes, etc.
The Romon All-Brass Grease Gun. Handles grease, oil, gasoline or water. Self-loading. Clean and quick in operation.

Write for full details and quotations

ROBERTS & MONROE, INC.
35 Warren St., New York



SHALER
ROADLIGHTER
FIRST!

Not only legal everywhere, but the only lens passed highest in every official state test.

Unlike other lenses, it protects the user against the glaring lights he meets, and improves the driving light 100%. Much easier to sell than dimming lenses.

Write for special demonstration offer to dealers.

C. A. Shaler Co., 906 4th St., Waupun, Wis.
Makers of the World-Famous SHALER Vulcanizers

Please mention The Automobile Trade Directory

DIMMERS or SHADES, Headlight (Continued)

Thule—See Kamp Auto Supply Co.
 Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.
 Torrance Glass Co.—See Atlas Trading & Navigation Co.
 Trieber Co., Benj., 4627 Broadway, Chicago, Ill. "Punch."
 Unique Auto Specialties Co., 280 Golden Gate Ave., San Francisco, Cal.
 United States Glass Co., Pittsburgh, Pa.
 Violet Ray—See Smith Glass Co.
 Warner-Patterson Co., 913 S. Michigan Ave., Chicago, Ill.
 Wickwire-Spencer Steel Corp., Worcester, Mass. "Onlee."
 (See pages 649 and 819.)
 Wilson, R. F., Foster Bldg., Denver, Colo.
 Wing Co., St. Cloud, Minn.

DIMMERS or SHADES, Headlight for Fords

(Diffusing and deflecting lenses or glasses, special shades and reflectors, hoods and screens, two filament bulbs, etc.—See also Regulators, Headlight)

A-K—See Angsten-Kox Co.
 Amesbury Bent Glass Co., Amesbury, Mass.
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
 (See page 537.)
 Boko—See Defiance Welding Co.
 Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
 Dim-Ur-Lite—See Toledo Cable Co.
 Doe Battery & Novelty Co., S. Water St., Kent, O.
 4-A Products Co., 3103 Downing St., Denver, Colo. (See page 861.)
 Han-D-Dim Co., 1645 W. 100th Pl., Chicago, Ill.
 Kamp Auto Supply Co., 707 Second Ave., S. Minneapolis, Minn.
 L. L. L. D. Mfg. Co., 203 State St., Rochester, N. Y.
 Lenslite—See Manufacturers Glass Co.
 Manufacturers Glass Co., 38 S. Dearborn St., Chicago, Ill. "Lenslite."
 Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.)
 (See page 350.)
 Onlee—See Wickwire Spencer Steel Corp.
 Only Grease Gun Co., Newton, Ia.
 Rex Mfg. Co.—See Merrill Co.
 Superb Lens Co., 1319 Washington Ave. N., Minneapolis, Minn.
 Thule—See Kamp Auto Supply Co.
 Toledo Cable Co., 1085 Grand Ave., Toledo, O. "Dim-Ur-Lite."
 Wickwire-Spencer Steel Corp., Worcester, Mass. "Onlee."
 (See pages 649 and 819.)

DIRECTION INDICATING SIGNALS—See
 Signals, Direction Indicating or Traffic

DIRIGIBLES—See Section I

DISC GRINDERS—See Grinders, Disc

DISC WHEELS—See Wheels, Pressed &
 Wrought Steel

DISC WHEELS, METAL—See Wheels,
 Metal Disc

DISC WHEELS, WOOD—See Wheels,
 Wood Disc

DISCS, CLUTCH—See Discs, Steel Clutch

DISCS, FABRIC CLUTCH—See Lining,
 Brake

DISCS, FRICTION—See Frictions, Fiber

DISCS, RADIATOR—See Discs or Fins,
 Radiator

DISCS, Universal Joint

(Flexible Fabric Discs)

Anchor Packing Co., 73 Murray St., New York, N. Y. "Anchorite."
 (See page 679.)

Anchorite—See Anchor Packing Co.

Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."

Thermoid Rubber Co., Trenton, N. J.
 (See page 551.)

Vitalic—See Continental Rubber Works.

DISCS or FINS, Radiator

Crosby Co., Buffalo, N. Y. (See page 898.)

DISCS, Steel Clutch

Bettcher Stamping & Mfg. Co., The, 3106 W. 61st St., Cleveland, O. (See page 895.)

Bossert Corp., Utica, N. Y.
 (See page 887.)

Buffalo Pressed Steel Co., Buffalo, N. Y.

Crosby Co., Buffalo, N. Y. (See page 898.)

Curtis Clutch Disc Co., 1646 Keimlen Ave., St. Louis, Mo. (See page 285.)

Disston & Sons, Henry (Tacony), Philadelphia, Pa.

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
 (See page 421.)

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 909.)

Oakes Co., Indianapolis, Ind.
 (See page 397.)

Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 889.)

Simonds Mfg. Co., North St., Fitchburg, Mass.

United & Globe Rubber Co., Prospect & Fraser Sts., Trenton, N. J.

Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

Everything is listed under the NOUN or principal word



RUBY PASSING LIGHT—
EXCLUSIVE "RED" SPOT FEATURE

New Single-Shell "RED SPOT" A Self-Seller!

This latest single-shell RED SPOT spotlight has already proved itself a ready seller. It is of fine gauge metal, soundly re-inforced, and as the picture indicates, is compact and without a single superfluity. The reflector is of our own "silver lining" type which cannot become tarnished by seepage, nor easily dented. The passing light transmits an intense beam of red light to the rear, warning oncoming drivers and saving many a fender accident. Order now—this new RED SPOT is down to bedrock in price.

THE F. W. WAKEFIELD BRASS CO.

Vermilion, Ohio



How to Make the Business Profitable

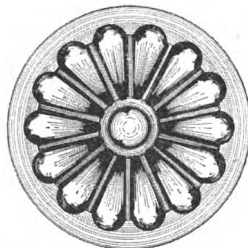
Every service station, repair shop and garage needs our book: "Standardized Service Accounting." This system is easy to install. When adapted and followed the exact working of the system creates confidence in the customer and puts your business on a cash basis. It deflates your Used-Car appraisals and makes your employees better, more productive workers. It operates your shop economically and to your profit, and gains for you the respect of your Banker. Price on application.

Motor Car Service Bureau, Inc.

Standardized Service Accounting

Centralized Purchasing Bureau

Danville, Ky.



All of the Light

None of the Glare

Jobbers & Dealers

At last you have an opportunity to cash in on the demand for a lens that is guaranteed to kill all of the glare and none of the light.

FILMOLENS

is not made of glass—won't break—lasts as long as the car.

Write today for our special proposition.

Retail Price \$1.75 per Pair

Our money back guarantee covers Jobber, Dealer, Consumer alike.

FILMOLENS SALES CO.

1926 Ford Bldg., Detroit, Mich.

MARKETING PLANS for the AUTOMOBILE DEALER

Build prestige and good will for yourself. Advertise and support your greatest asset—your own organization. Munn Service does this at little cost. Hundreds of successful dealers use it.

Send for Free Booklet

The John O. Munn Company

Bank of Commerce Bldg., Toledo, Ohio

Please mention The Automobile Trade Directory

DISCS, Wheel

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., 515 W.
 Monroe St., Chicago, Ill. "Adco."
 (See page 77.)

Gal-Lau Steel Disc Co., 702 Market St., San
 Francisco, Cal.

Lack Mfg. Co., 1200 S. Third St., Paducah,
 Ky.

Lebanon Gear & Machine Works, 1440 Forge
 St., Lebanon, Pa.

Schutte Body Co., Charles, 137 E. Marion St.,
 Lancaster, Pa.

DISCS, Wheel for Fords

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., 515 W.
 Monroe St., Chicago, Ill. "Adco."
 (See page 77.)

Corcoran Mfg. Co., Section & Foraker Aves.
 (Norwood), Cincinnati, O. "Peerless."

Empire Auto Specialty Co., 1426 Blue
 Island Ave., Chicago, Ill.
 (See page 137.)

Peerless—See Corcoran Mfg. Co.

**DISENGAGING TRACTOR HITCHES,
AUTOMATIC—See Hitches, Automatic
Disengaging Tractor****DISPENSERS, GREASE—See Guns, Por-
table Grease Grease****DISTANCE RECORDING METERS—See
Meters, Distance Recording****DISTANCE RODS FOR FORDS—See Rods,
Radius****DISTILLED WATER—See Water, Distilled****DISTRIBUTOR PARTS—See Parts, Mag-
neto, Coil and Distributor****DISTRIBUTORS, SPARK—See Timers, Ig-
nition; also Magnetos; also Systems, Bat-
tery Ignition; also Starters, Electric.****DIVIDERS AND CALIPERS—See Calipers
and Dividers****DOGS, Lathe**

Armstrong Bros. Tool Co., 304 N. Fran-
 cisco Ave., Chicago, Ill.
 (See page 337.)

Billings & Spencer Co., Laurel & Park Sts.,
 Hartford, Conn.

Bonney Forge & Tool Works, Allentown, Pa.
 "Indispensable."

Collmer Bros., 107-11 Lincoln Way, E., South
 Bend, Ind. "Le Count."

Efficiency Device Corp., 198 Eighth St., Long
 Island City, N. Y.

Indispensable—See Bonney Forge & Tool
 Works.

Le Count—See Collmer Bros.

Le Count, Wm. G., Merritt St., South Nor-
 walk, Conn.

Luts-Webster Engineering Co., 31st St. &
 Grays Ferry Rd., Philadelphia, Pa.
 Mark Mfg. Co., 111 W. Washington St., Chi-
 cago, Ill.

O. K. Tool Holder Co., Shelton, Conn.
 Oswego Tool Co., 119-27 W. First St., Os-
 wego, N. Y.

Phoenix Hardware Co., 49-53 Illinois St., Buf-
 falo, N. Y.

Ready Tool Co., 624 Iranistan Ave., Bridgeport,
 Conn. "Red-E."

Red-E—See Ready Tool Co.

Union Tool Co., 48 E. River St., Orange, Mass.

Vulcan—See Williams & Co.

West Steel Casting Co., 805-41 E. 70th St.,
 Cleveland, O.

Western Tool & Mfg. Co., Springfield, O.
 Williams & Co., J. H., 38 Richard St.,
 Brooklyn, N. Y. "Vulcan."
 (See page 1073.)

DOMELIGHTS—See Lights, Electric Dome**DOOR ANTI-RATTLERS—See Anti-Rat-
tlers, Door****DOOR BUMPERS—See Anti-Rattlers, Door****DOOR CURTAIN FITTINGS—See Openers,
Curtain****DOOR HANDLES—See Handles, Door****DOOR HANGERS—See Hangers and
Hinges, Garage Door****DOOR HINGES—See Hinges, Door; also
Hangers and Hinges, Garage Door****DOOR HOLDERS—See Holders and Open-
ers, Garage Door****DOOR LATCH EXTENSIONS FOR FORDS
—See Extensions, Door Latch****DOOR LOCKS—See Locks, Door****DOOR OPENERS—See Holders and Open-
ers, Garage Door; also Openers, Electric
Garage Door****DOOR POCKETS FOR FORDS—See Pock-
ets, Door****DOOR PROTECTORS—See Protectors,
Door****DOORS, Special Garage**

(For special garage door hangers, hinges and holders—
 See Hangers, Garage Door; also Holders and Openers
 Garage Door; also Openers, Electric Garage Door)

Almett—See Merchant & Evans Co.

Cornell Iron Works, 601 W. 26th St., New
 York, N. Y.

Merchant & Evans Co., 2035 Washington Ave.,
 Philadelphia, Pa. "Almett."

Right Angle Garage Door Co., 2809 Geary St.,
 San Francisco, Cal.

St. Louis Fire Door Co., 1512 Clark Ave., St.
 Louis, Mo.

Everything is listed under the NOUN or principal word



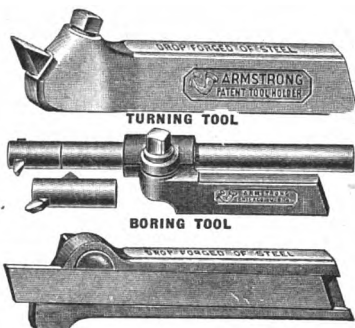
The consistent silence, reliability and efficiency of

"THE COVENTRY" Noiseless Chains

For Camshaft, Magneto, and Pump Drives of Automobiles is Proved by the Fact That All the Makers of the Most Silent and Reliable Engines Fit Them as Standard.

Exclusive U. S. Representatives

HERBERT F. L. FUNKE CO., INC.
118 Broad Street, New York



CUTTING OFF TOOL

Armstrong Lathe Tools

For Turning, Boring, Knurling, Threading, Cutting Off and Side Work. Write for our new general catalog.

—Other Tools We Make—
Lathe Dogs, Clamps, Ratchet Drills, Wrenches

Armstrong Bros. Tool Co.
"The Tool Holder People"

384 N. Francisco Ave.

Chicago, Ill.

Leslie's

A Motor Department that reaches 500,000 "better-than-average" homes and dealer supplements, "Leslie's Motor Review" and "Accessory Dealers Supplement" reaching 25,000 dealers—

—this is the service offered by
America's Leading illustrated
weekly newspaper.
LESLIE'S WEEKLY NEW YORK CITY

The Modern Tool Die Mch. Co.

BACK
FROM WAR



FULLY EQUIPT
AND NOW
AT YOUR SERVICE

MODERN METHODS USED
DESIGNED—BUILT—CORRECT
PRICES QUOTED—WRITE US

214-220 N. 4th St., Columbus, O.

Please mention The Automobile Trade Directory

DOPE, AIRPLANE WING—See Coatings, Wing; also Varnishes.

DOPE INJECTORS—See Guns, Grease

DOUBLE TREAD TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching

DRAG LINKS—See Connections, Steering

DRAG LINKS FOR FORDS—See Links, Steering

DRAGS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing

DRESSERS, Emery Wheel

Baldwin, Tuthill & Bolton, 465-505 Sixth St., Grand Rapids, Mich.

Bandler & Sons, Bernard, & W. 40th St., New York, N. Y.

Braunsdorf-Mueller Co., 305 Madison St., Elizabeth, N. J.

Calder, Geo. H., 628 N. Prince St., Lancaster, Pa.

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. "Huntington." (See pages 551 and 827.)

Clizbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind. "Plymouth," "Imperial."

Collmer Bros., 107-11 Lincoln Way, E., South Bend, Ind. "Huntington."

Crackerjack—See Steele Co.

Crafts, Arthur A., 125 Summer St., Boston, Mass.

Desmond-Stephan Mfg. Co., Urbana, O.

Diamond Saw & Stamping Works, 257-61 Seventh St., Buffalo, N. Y. "Sterling."

Diamond Tool Co., 326 W. Madison St., Chicago, Ill.

Diamond Tool & Die Co., 438 Asylum St., Hartford, Conn.

E. & S.—See J. B. S. Mfg. Co.

Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.

H. F. Co., Midland, Mich. (See page 359.)

Huntington—See Chicago Screw Co.

Huntington—See Collmer Screw Co.

Huntington—See Mark Mfg. Co.

Imperial—See Clizbe Bros. Mfg. Co.

J. B. S. Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y. "E. & S."

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill. "Huntington."

Meyers Co., W. F., 13th & J. Sts., Bedford, Ind.

Miowna—See Whitlock Mfg. Co.

North Wales Machine Co., Elm Ave. & Center St., North Wales, Pa.

Peninsula Emery Wheel Co., Detroit, Mich.

Plymouth—See Clizbe Bros. Mfg. Co.

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Ross Mfg. Co., 2160 W. 166th St., Cleveland, O.

Seal Oil—See Whitlock Mfg. Co.

Standard Tool Co., 6900-24 Central Ave., Cleveland, O.

Steele Co., W. M., 98-100 Beacon St., Worcester, Mass. "Crackerjack."

Sterling—See Diamond Saw & Stamping Works.

Sterling Grinding Wheel Co., Tiffin, O. (See page 1057.)

Tanite Co., Stroudsburg, Pa.

Velvetone—See Whitlock Mfg. Co.

Vincent Steel Process Co., 3131 Bellevue Ave., Detroit, Mich.

Warren Axe & Tool Co., Warren, Pa.

Western Tool & Mfg. Co., Springfield, O.

Wheel Truing Tool Co., 2130 Penobscot Bldg., Detroit, Mich. (See page 359.)

Wrigley Co., Thomas, 504 S. Sherman St., Chicago, Ill.

DRESSING, BELT—See Dressing, Clutch

DRESSING, Brake

Brak-rite Mfg. Co., 176 Division St., Amsterdam, N. Y.

Hoagland Co., C. W., 40 Court St., Boston, Mass. "Holdfast."

Holdfast—See Hoagland Co.

Spoco Oil Co., 318 Larimer St., Denver, Colo.

DRESSING, CELLULOID—See Cleaners, Celluloid

DRESSING, Clutch and Belt

(For leather faced clutches and leather fan belts)

All-in-One—See Durkee-Atwood Co.

Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."

Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)

Blue Ribbon—See Jobbers' Mfg. Co.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Camo—See Perkins-Campbell Co.

Clark's Chemical Laboratories, Dr., 5401 Ingleside Ave., Chicago, Ill.

Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "All-in-One."

Ensign Refining Co., 10708 Quebec Ave., Cleveland, O.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 229.)

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whis."

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)

I. C. U.—See Livingston Co.

Instant Products Co., 21 Cambria St., Boston, Mass.

Jewell Belting Co., 55 Trumbull St., Hartford, Conn.

Jobbers' Mfg. Co., 327 S. La Salle St., Chicago, Ill. "Blue Ribbon."

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Perkins-Campbell Co., Cincinnati, O. "Camo." (See page 115.)

Permatex—See Benoit, Constant A.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rex—See Armiger Chemical Co.

Rhoads & Son, J. M., 12 N. Third St., Philadelphia, Pa.

Rie-Nie—See Durkee-Atwood Co.

Une Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.

Whis—See Hollingshead Co.

Whitlock Mfg. Co., 1596 W. 112th St., Cleveland, O. "Seal Oil," "Miowna," "Velvetone."

Wonder Worker—See Hall-Thompson Co.

Everything is listed under the NOUN or principal word

WHEEL TRUING TOOL CO

Importers of

BORTZ and CARBON

DIAMONDS

Manufacturers of

DIAMOND TOOLS

Our Mountings Are Guaranteed

PROMPT SERVICE

General Offices

2130 Penobscot Bldg., Detroit, Mich.

Branch Offices

Milwaukee
120 Wisconsin Street
Cleveland
363 Engineers Bldg.

New York
527 Fifth Avenue

St. Catharines
5 James Street
Windsor
88 West Pitt Street



*The Test of Service
Proves Their Worth*

H. P.
Abrasive

**Wheel Truing Tools
for PRECISION GRINDERS**

Have been in continuous service in the following large plants for the past fourteen months:

The Willys Overland Co., Toledo, Ohio
The Buick Motor Car Co., Flint, Mich.
The Chevrolet Motor Co., Flint, Mich.
The Anderson Forge Co., Detroit, Mich.
Northway Motor Corp., Detroit, Mich.
Studebaker Corporation, Detroit, Mich.

These tools are effecting a saving in grinding wheel dressing costs in these large plants. **WHY NOT YOURS?**

H. P. ABRASIVE WHEEL TRUING TOOLS are made in three styles, for "roughing," "finishing" and dressing the sides of wheels.

Specify size of shank when ordering.

THE H. P. COMPANY
Emery Wheel Dresser Division
MIDLAND MICHIGAN

Automobile and Aircraft Insurance Specialists

**ASK
ANY
DEALER
ABOUT
OUR
SERVICE**

L. T. HOLLISTER, Inc.
INSURANCE

92 William St., N. Y. City
Tel. John 3134

New York

London

Please mention The Automobile Trade Directory

DRESSING, Leather

(For refinishing leather tops or upholstery)

- Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
- Ajaco—See Alsdorf Corp.
- All-in-One—See Durkee-Atwood Co.
- Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
- American Lacquer Co., Bruce Ave., Bridgeport, Conn.
- American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
- Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
- Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silknap."
- Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
- Aut-O-Sek—See Sek Mfg. Co.
- Auto Products Mfg. Co., Buffalo, N. Y. "Rub-R-Tite," "Leath-R-Like," "Col-R-Old," "Non-Gloss," "Col-R-Drab."
- Auto Specialties Mfg. Co., Buffalo, N. Y. "Knu-Lack," "Dull Lac," "Re-Knu." (See page 363.)
- Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.
- Baum's Gasoline Co., 104 N. George St., Rome, N. Y.
- Be-Be-Co.—See Boston Blacking Co.
- Benoit, Constant A., Brooklyn, N. Y. (See page 227.)
- Bergh Specialty Co., 1433 McCadden Pl., Los Angeles, Cal.
- Bilchaco—See Billings-Chapin Co.
- Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco," "Oughto."
- Black Bear—See Damon Specialty Co.
- Black-Lak—See Johnson & Son.
- Blood & Co., T. L., 413 Wacouts St., St. Paul, Minn.
- Blue Ribbon—See International Metal Polish Co.
- Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
- Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
- Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill.
- Bulls-Eye—See Zinsser & Co.
- Butler-Harley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
- Century—See Arnstein, Eugene.
- Certain-teed Products Corp., Boatmans Bank Bldg., St. Louis, Mo.
- Col-R-Drab—See Auto Products Mfg. Co.
- Col-R-Old—See Auto Products Mfg. Co.
- Columbus Varnish Co., Columbus, O. (See page 361.)
- Conco—See Conewango Chemical Co.
- Conewango Chemical Co., Warren, Pa. "Conco."
- Cummer Products Co., 2150 W. 15th St., Cleveland, O. "Perfect Auto Gloss."
- Damon Specialty Co., 516 E. Ninth St., Los Angeles, Cal. "Black Bear," "Non-O-Ilo."
- Dibble Color Co., 129 Larned St., W., Detroit, Mich.
- Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
- Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.
- Dix Mfg. Co., Lewistown, Pa.
- Dull-Lac—See Auto Specialties Mfg. Co.
- Dunwoody Bros. Co., 513 Edgewood Ave., Atlanta, Ga. "Over All."
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "All-in-One."
- Dutch—See Van Cleef Bros.
- E-Fec-Tiv—See Permatite Mfg. Co.
- Ebersohn-Lindaley Paint Co., 1339-33 Morgan St., St. Louis, Mo. "Leather-Lac."
- Effecto—See Pratt & Lambert.
- Evernew—See Felton, Sibley & Co.
- F-S.—See Felton, Sibley & Co.
- Felton, Sibley & Co., 134-40 N. Fourth St., Philadelphia, Pa. "Evernew," "F-S."
- Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis.
- Flexo—See Rodriguez, R. E.
- Glidden Sales Co., 573-75 Forest Ave., Buffalo, N. Y. "Koto."
- Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker," "Quad-Lac." (See page 229.)
- Harco—See Butler-Harley Co.
- Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
- Hathaway & Sons, C. L., 246 Congress St., Boston, Mass.
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
- I. C. U.—See Livingston Co.
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Jewell—See Wadsworth-Howland Co.
- Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Black-Lak."
- Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O. "Leather Lac," "Top Fix."
- K-K-K—See Killen Chemical Co.
- Kellerman, I., 674 Ninth Ave., New York, N. Y.
- Killen Chemical Co., 403 S. Shawassee St., Lansing, Mich. "K-K-K"
- Kneutop—See Western Reserve Varnish Co.
- Knu-Lack—See Auto Specialties Mfg. Co.
- Koto—See Glidden Sales Co.
- Lawrence & Co., W. W., Pittsburgh, Pa.
- Leath-R-Like—See Auto Products Mfg. Co.
- Leath-R-Nu—See Nu-Back Mfg. Co.
- Leather-Lac—See Ebersohn-Lindaley Paint Co.
- Leather Lac—See Johnston Paint Co.
- Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
- Lucas & Co., John, 323-20 Race St., Philadelphia, Pa.
- McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
- Makmer—See Wadsworth, Howland Co.
- Mansfield Mfg. Corp., 323 S. Clinton St., Syracuse, N. Y.
- Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
- Mat's—See Weiss Polish Works.
- Mechem, J. L., 113 E. Jackson St., Centerville, Ia.
- Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
- Miller Oil Products Corp., Bloomfield, N. J.
- Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
- Montgomery-Washburn Co., Saugerties, N. Y.
- National Chemical Co., Canal Fulton, O. "Quick-Seal."
- Non-Gloss—See Auto Products Mfg. Co.
- Non-O-Ilo—See Damon Specialty Co.
- Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
- Norwesco—See Northwestern Chemical Co.
- Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."

Everything is listed under the NOUN or principal word

PEERLESS

Automobile Specialties

Makes old cars look like new

A different product for each part to make all used cars look as good as possible.



Quality goods sold in lithographed cans. Complete directions on back of each can.

Peerless Mohair Top Dressing

Waterproof, dresses and dyes mohair, duck and canvas tops and curtains like new. Dries over night, leaving tops soft and pliable.

About one quart to dress a five-passenger car top.

Pint, 90c; Quart, \$1.65

Peerless Leather Top Dressing

An oil dressing to renew the finish, and keep rubber, leather and parianette tops and curtains soft and pliable. Dries over night. Not for seats or cushions.

About one quart to dress large five-passenger top and curtains.

Pint, 90c; Quart, \$1.65

Peerless Ford Top Dressing

A dressing made for Ford top material, making a rich black gloss finish, adding life and color to old tops. Dries over night, wears indefinitely.

About one pint for a runabout top; one quart for a touring car top.

Pint, 90c; Quart, \$1.65

Peerless Cushion Dressing

Without danger of washing or rubbing off, it brightens and renews the finish of leather seats and cushions. Dries in thirty minutes.

About one pint for small car and one quart for large car.

Pint, 90c; Quart, \$1.65

Peerless Lamp Enamel—Gloss and Dull

A rich finish for brass, nickel or iron.

One coat covers solid over the metal or old enamel. Air drying over night.

Pint, 90c; Quart, \$1.65

Peerless Cylinder Enamel—Black and Gray

A rich gloss enamel that saves cylinders and all metal engine parts from rusting. Not injured by heat, grease or gasoline. Air drying over night.

Pint, 90c; Quart, \$1.65

Peerless Tire Paint

A white waterproof coating for tires containing nothing injurious to rubber and keeps tire looking bright and new.

One pint will cover five regular casings.

Pint, 90c; Quart, \$1.65

Peerless Liquid Wax

A wax polish for all varnished surfaces of automobiles. In liquid form so that it is easily applied in a light even coat. Polished with ease and ready for use at once. Does not collect dust, and is not injured by water.

One pint will polish a large car.

Pint, 90c; Quart, \$1.65

Peerless Auto Body Polish

A varnish food to brighten and renew the appearance of all varnished surfaces on an automobile. Applied and polished ready for use in a very few minutes.

About one pint will polish a car.

Pint, 90c; Quart, \$1.65

Peerless Battery Box Black—Acid-Proof

An acid-proof coating for wood and metal that comes in contact with acid and fumes from batteries. Keeps acid from destroying wood and metal.

Pint, 90c; Quart, \$1.65

Peerless Color Finishing Varnishes

The idea of an owner wanting to paint the body, wheels or chassis of his automobile his favorite color is now realized by the use of these products. The work can be done at home. The goods will cover solid with one coat and dry satisfactory over night. Very durable products. Made in eight colors.

	Straw Color	
	Medium Yellow	
Pint,	Red	Quart,
	Royal Auto Blue	
\$1.00	Gray	\$1.90
	Brewster Green	
	Black	
	White	

Peerless Black Japan—Extra Fine

A rich gloss air drying enamel for touch-up and all-around use on wood and metal parts of automobiles. One coat covers solid and dries over night.

Pint, 90c; Quart, \$1.65

Peerless Fender Japan—Jet Black

Made especially for coating fenders and hoods with a rich black gloss enamel. Air dries and has a finish like a baked job. Dries in twenty-four to thirty-six hours.

About one quart to coat fenders of a small car.

Pint, 90c; Quart, \$1.65

Peerless Mirroroid

A varnish remover; to be applied to varnished surfaces that have lost their lustre and become dull through use. Dries over night with a fine lustre that will wear for months.

One pint is one quart to finish an automobile.

Pint, 90c; Quart, \$1.65

Peerless Gasket Shellac

A strictly high grade shellac for gasket, cork carburetor floats, and such parts on an automobile. This is a high grade product cut in pure alcohol. Is not affected by gasoline.

1/4 Pt., 40c; 1 Pt., 75c;
1 Qt., \$1.85; 2 Oz. Bot., 20c

Peerless Lining Dye

A powerful black dye that dyes all cloth lining a black uniform color over stains and faded parts alike. Dries in two to three hours.

About one quart to dye inside of five-passenger car top.

Pint, 90c; Quart, \$1.65

Peerless Rim Paint—Anti-Rust

A protective coating for automobile rims, to allow tires to be removed with ease and keep rims from rusting. Dries in four to five hours.

About one pint for rims of a small car.

Pint, 90c; Quart, \$1.65

Used throughout the world by owners, garages and chauffeurs. Also used by over 8000 particular automobile painters.

DEALERS AND JOBBERS, NOTICE!

For your special convenience we have listed our complete line so that at all times you will have our catalogue before you with dealer, garage, hardware store, and paint shop discount of 33 1/3% from list prices. Ask your jobber or write us for latest catalogue, also window display material and other selling helps.

Made and sold on a quality basis only by,

The Columbus Varnish Co.
Sole Makers Columbus, O., U.S.A.

Please mention The Automobile Trade Directory

DRESSING, Leather (Continued)

NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Nutop—See Oriental Compound Co.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 On-E-Z—See Sutorius Auto Top Co.
 One-Cote—See U-co Mfg. Co.
 Oriental Compound Co., 151 Cricket Ave., Ardmore, Pa. "Nu-top."
 Oughto—See Billings-Chapin Co.
 Outlook Co., 5518 Euclid Ave., Cleveland, O.
 Over All—See Dunwoody Bros. Co.
 Peerless—See Columbus Varnish Co.
 Perfect Auto Gloss—See Cummer Products Co.
 Permatex—See Benoit, Constant A.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Top-Newer."
 Pioneer—See Northwestern Chemical Co.
 Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Efects."
 Preserve—See Robeson Preserve Co.
 Quad-Lac—See Hall-Thompson Co.
 Quick-Seal—See National Chemical Co.
 Quickwork—See Standard Varnish Works.
 Re-Knu—See Auto Specialties Mfg. Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
 Red Line, Inc., Grand Rapids, Mich. (See page 367.)
 Rex—See Armiger Chemical Co.
 Rie-Nie—See Durkee-Atwood Co.
 Robeson Preserve Co., White Bldg., Port Huron, Mich. "Preservo."
 Rodriguez, R. E., 56-58 Warren St., New York, N. Y. "Flexo."
 Rogers—See Detroit White Lead Works.
 Rub-R-Tite—See Auto Products Mfg. Co.
 St. Louis Rubber Cement Co., 3046 Lombdin Ave., St. Louis, Mo.
 Sek Mfg. Co., 4301 Kinzie St., Chicago, Ill. "Aut-O-Sek."
 Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill.
 Silkup—See Arnold, N. B.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal. "Top-Nu."
 Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn. "On-E-Z."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Thumb, E. W., 373 Orleans St., Chicago, Ill.
 Top Fix—See Johnston Paint Co.
 Top-Nu—See Super-Glos Mfg. Co.
 Top-Newer—See Pimbley Paint & Glass Co.
 Top Tite—See Woodtite Laboratories.
 Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
 Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twincoco."
 Twincoco—See Twin City Varnish Co.
 U-co Mfg. Co., 110 West 42d St., New York, N. Y. "One-Cote."
 U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass.
 Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Var-Namel Co., Brooklyn, N. Y.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewell."
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Makmer."
 Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat'a."
 Western Reserve Varnish Co., Cleveland, O. "Kneutop."
 West's Sons, L. M., 230 Broadway, Rockford, Ill.
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.
 Woodtite Laboratories, Modesto, Cal. "Top Tite."
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

DRESSING MACHINES—See Machines,
Top Bow Dressing

DRESSING, Mohair Top

(For cleaning and renovating mohair tops, slip covers or upholstery)

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich. "Neals."
 Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)
 Ajaco—See Alsdorf Corp.
 All-in-One—See Durkee-Atwood Co.
 Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
 American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Elippo."
 American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Aut-O-Sek—See Sek Mfg. Co.
 Auto Specialties Mfg. Co., Buffalo, N. Y. "Dull-Lac." (See page 363.)
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Be-Be-Co.—See Boston Blacking Co.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Bergh Specialty Co., 1435 McCadden Pl., Los Angeles, Cal.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O.
 Black-Lak—See Johnson & Son.
 Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
 Blue Ribbon—See International Metal Polish Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Butler-Harley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
 Campbell Glass & Paint Co., Main & Gratiot Sts., St. Louis, Mo.
 Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
 Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Conco—See Conewango Chemical Co.
 Conewango Chemical Co., Warren, Pa. "Conco."
 Dibble Color Co., 129 Larned St., W., Detroit, Mich.
 Dull-Lac—See Auto Specialties Mfg. Co.
 Dunwoody Bros. Co., 513 Edgewood Ave., Atlanta, Ga. "Ovel All."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Everything is listed under the NOUN or principal word



Every motorist knows the danger of clouded curtains. C-E-Z gives clear vision, saving its cost many times over.

JOBBERS

Do not fail to include C-E-Z (See Easy) Celluloid Cleanser in your 1921 line.

This unique specialty, the only known product of its kind on the market, clears, cleans, and preserves celluloid windows in automobile curtains. Put up in attractive counter display cartons holding one dozen cans each.

Sold through jobbers only. Dealer helps assure quick turnover.

Send for prices and discounts on our full line of AD-EL-ITE Auto Specialties.

ADAMS & ELTING CO.
716-726 Washington Boulevard, CHICAGO
TORONTO NEW YORK



Quality **BEATS ALL** Brand

Incorporated into the base of Beats-All Top Dressings is a LIQUID RUBBER which guarantees their Weather-proof and Re-rubberizing qualities. Gives the old top that new factory appearance and durability. Adapted for any top.

Mohair Top Dressing.....	Pts.. \$0.85; Qts.. \$1.60
Dull-Lac Top Dressing.....	Pts.. .90; Qts.. 1.85
Kau-Lac Ford Top Dressing...Pb..	.85; Qts.. 1.60
Re-Knu Upholstery Dressing—	
Black.....	Pts.. .90; Qts.. 1.85
Brown.....	Pts.. 1.00; Qts.. 1.85
Re-Knu Black Lining Dye—	
(Concentrated).....	Pts.. 1.50; Qts.. 2.75
Drab Lining Dye.....	Pts.. 1.50; Qts.. 2.75
Gloss Black Enamel.....	Pb.. .90; Qts.. 1.85
Sty-On Auto Top Patches.....	\$8.00 per dozen

17 More Auto Economy Products

Send for descriptive catalog and our liberal discounts to the trade.

Auto Specialties Mfg. Co., Inc.
Buffalo, N. Y.

Branches:

320 Market St., San Francisco, Cal.
Fort Erie, Canada

“HEATH”
Makes Storage Battery Separators

EXCLUSIVELY

THE making of storage battery separators has become a science just like everything else.

The jack of all trades is no longer a factor in business — today it's the man who concentrates his entire energies upon one thing, who produces something so superior that it stands out from the crowd.

Our specializing exclusively in the manufacturing of storage battery separators has made the name of “HEATH” stand for a definite quality IN STORAGE BATTERY INSULATORS.

So, for your own protection be sure and specify “HEATH” the next time you order.

HEATH MANUFACTURING CO.
GREENVILLE MICHIGAN

Please mention The Automobile Trade Directory

DRESSING, Mohair Top (Continued)

- Eberson-Lindsay Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 Effecto—See Pratt & Lambert.
 Evans Mfg. Co., 629-32 E. 63d St., Chicago, Ill.
 Evernew—See Felton, Sibley & Co.
 Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa. "Evernew."
 Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis.
 Glidden Sales Co., 573-75 Forest Ave., Buffalo, N. Y. "Koto."
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker," "Quad-Lac." (See page 229.)
 Harco—See Butler-Harley Co.
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R. Toledo, O.
 Heath & Milligan Mfg. Co., 1833 Seward St., Chicago, Ill.
 Hippo—See American Chemical & Mfg. Co.
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
 I. C. U.—See Livingston Co.
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Black-Lak."
 Johnston Paint Co., R. F. Pearl & Main Sts., Cincinnati, O.
 K-K-K—See Killen Chemical Co.
 Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K"
 Kneutop—See Western Reserve Varnish Co.
 Koto—See Glidden Sales Co.
 Leath-R-Nu—See Nu-Back Mfg. Co.
 Liberty Chemical Works, 353 E. Illinois St., Chicago, Ill.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Mansfield Mfg. Co., 822 S. Clinton St., Syracuse, N. Y.
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
 Miller Oil Products Corp., Bloomfield, N. J.
 Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 Neals—See Acme White Lead & Color Works.
 Noble Plano Co., 4841 Woodward Ave., Detroit, Mich.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
 Norwesco—See Northwestern Chemical Co.
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Nutop—See Oriental Compound Co.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 Oriental Compound Co., 151 Cricket Ave., Ardmore, Pa. "Nutop."
 Over All—See Dunwoody Bros. Co.
 Peerless—See Columbus Varnish Co.
 Perfectite—See Price Fire & Water Proofing Co.
 Perma-Lac Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Permatex—See Benoit, Constant A.
 Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Top-Newer."
 Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."
 Preserve—See Robeson Preserve Co.
 Price Fire & Water Proofing Co., 43 Union St., Poughkeepsie, N. Y. "Perfectite," "Revivit," "Protectol."
 Protectol—See Price Fire & Water Proofing Co.
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Quad-Lac—See Hall-Thompson Co.
 Rainoil—See Waterproof Oil Products Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Red Line, Inc., Grand Rapids, Mich. (See page 687.)
 Revivit—See Price Fire & Water Proofing Co.
 Rie-Nie—See Durkee-Atwood Co.
 Robeson Preserve Co., White Blk., Port Huron, Mich. "Preservo."
 Rome—See Howard Lubricants Co.
 Sek Mfg. Co., 4301 Kinzie St., Chicago, Ill. "Aut-O-Sek."
 Simons—See Simons Mfg. Co.
 Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill. "Simonz."
 Silkup—See Arnold, N. B.
 Ten Elek, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Top-Newer—See Pimbley Paint & Glass Co.
 Twin City Varnish Co., 203 N. Wabash Ave., Chicago, Ill. "Twincos."
 Twincos—See Twin City Varnish Co.
 Waterproof Oil Products Co., Seattle, Wash. "Rainoil."
 West's Sons, L. M., 230 Broadway, Rockford, Ill.
 Western Reserve Varnish Co., Cleveland, O. "Kneutop."
 Wonder Worker—See Hall-Thompson Co.

DRESSING, TOP—See Dressing, Leather also Dressing, Mohair

DRESSING, UPHOLSTERY—See Dressing Leather

DRIFT INDICATORS, AIRPLANE—See Indicators, Airplane Drift

DRIFT PINS—See Punches, Center, Prick and Drift

DRIFT PUNCHES—See Punches, Center Prick and Drift

DRILL CHUCKS—See Chucks, Drill

DRILL, ENAMELED—See Cloth, Enamel

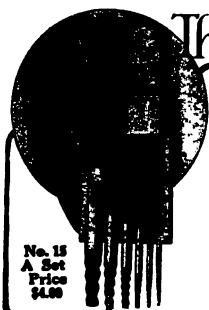
DRILL GAGES—See Gages, Drill

DRILL GRINDERS—See Grinders, Drill

DRILLING BUSHINGS — See Bushing Drilling and Reaming

DRILLING COMPOUNDS—See Lubricant Cutting

Everything is listed under the NOUN or principal word



No. 15
A Set
Price
\$4.00

The Tool to use on Broken Screws

Three minutes' easy work removes a broken set or cap-screw, stud, pipe fitting, cylinder bolt, etc., IF you use

E-Z-Y-OUT SCREW EXTRACTOR

WHERE TO USE IT

On any sort of broken screw, no matter how far down in the hole it's broken off or how tightly it's stuck. Saves retapping and damage to neighboring surfaces.

Designed by a garageman and made by the largest makers of twist drills and reamers, and stocked by our dealer.

THE CLEVELAND TWIST DRILL COMPANY
New York CLEVELAND Chicago

HOW TO USE IT
Just drill a hole in the broken screw, insert "E-Z-Y-Out," slap on a tap wrench and twist—and the broken screw backs out on its own threads.

EASTERN PARTS MFG. CO., Inc.
125 SPRING STREET, NEW YORK

*To the trade
The superiority of
"Punko Products" is
undoubted by the large demand
for our parts.
As manufacturer the most complete
line of Ignition Repair Parts and
brakes—and we pack them in
individual containers—solicits
your Ignition business—let us send you one of our
New Catalogues—You need not
buy—but you will.
Wolfe
Sales Manager*

Here Is Your SYSTEM

Auto Dealers—Garage Men

A complete and inexpensive Accounting System designed especially for the automobile and garage business—approved by the most successful men in the game.

Simplifies your bookkeeping and cuts the cost—keeps your accounts RIGHT to the smallest detail, with least amount of time and labor.

You Need It—You'll Like It

We send actual samples of the complete system FREE to all who ask for them—do it NOW?

GREGORY MAYER & THOM CO.

Printers, Engravers, Lithographers, Loose Leaf Devices,
Blank Books, Stationery and Office Furniture

19-21 CADILLAC SQUARE DETROIT, MICH.

**Drills, Twist, High Speed
and Carbon Steel**

**Reamers, Standard and
Adjustable**

Cutters, Milling

**Taps, Dies and Screw Plates
Screws, Cap and Set**

**Screw Machine Products
to order**

Special Tools to Blue Print

The Republic Tool & Mfg. Co.

1399-1401 W. 9th St.

Cleveland, Ohio

Please mention The Automobile Trade Directory

DRILLS and BITS, Battery Strap

(Special Drills and Bits for Drilling off the Strap or Connector on Storage Batteries when making repairs)

Kay, F. S., Reserve Bank Bldg., Kansas City, Mo.
Larson & Lundberg, 325 N. Main St., Ke-
wanee, Ill.
Xander, J. G., 824 Court St., Reading, Pa.

DRILLS, Breast

Consolidated Tool Works, 261 Broadway, New
York, N. Y. "Pilot."
Frey Co., John S., 936 Crescent Ave., Bridge-
port, Conn.
Goodell-Pratt Co., Greenfield, Mass.
Malleable Iron Fittings Co., Branford,
Conn. "Mifco." (See page 247.)
Mifco—See Malleable Iron Fittings Co.
Millers Falls Co., Millers Falls, Mass. "Star."
North Bros. Mfg. Co., American St. & Lehigh
Ave., Philadelphia, Pa. "Yankee."
Peck, Stow & Wilcox Co., Southington, Conn.
"Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Pilot—See Consolidated Tool Works.
Stanley Works (Special Productions
Dept.), New Britain, Conn.
(See page 491.)
Star—See Millers Falls Co.
Wilkinson & Co., A. J., 180-83 Washington
St., Boston, Mass.
Yankee—See North Bros. Mfg. Co.

DRILLS, Centering

Cleveland Twist Drill Co., Cleveland, O.
(See page 385.)
Republic Tool & Mfg. Co., 1399-1401 W.
Ninth St., Cleveland, O. (Jobbers.)
(See page 385.)
Slocumb Co., J. T., 35 Oxford St., Providence,
R. I.

**DRILLS, GRINDERS and POLISH-
ERS, Electric Portable**

American Electric Tool Co., West Newton,
Mass.
Arnold Electric Tool Co., New London, Conn.
Blit-Rite Mfg. Co.—See Fairbanks Co.
Black & Decker Mfg. Co., Towson Heights,
Baltimore, Md.
Chicago Pneumatic Tool Co., 6 E. 44th
St., New York, N. Y. "Little Giant."
(See page 369.)
Chicago Flexible Shaft Co., 5800 W. Roosevelt
Rd., Chicago, Ill. "Stewart."
Cincinnati Electrical Tool Co., 1501-03 Free-
man Ave., Cincinnati, O.
Clark, Jr., Electric Co., James, 530 W. Main
St., Louisville, Ky. "Willey."
Coates Clipper Mfg. Co., 237 Chandler St.,
Worcester, Mass.
Deer Co., A. J., Hornell, N. Y. "Royal."
Dumore—See Wisconsin Electric Co.
Duntley-Dayton Co., 1416 S. Michigan Ave.,
Chicago, Ill. (Sole Distributors for Sap-
hill Mfg. Co., Chicago, Ill.)
Fairbanks Co., New York, N. Y. (Sole Dis-
tributors for Blit-Rite Mfg. Co., Worcester,
Mass.)
Gem Mfg. Co., Goebel & Fulton Sts., Pitts-
burgh, Pa.
Gillilan Bros. Smelting & Refining Co., 217
W. Sixth St., Los Angeles, Cal.

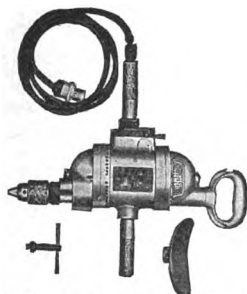
Haskins Co., R. G., 27 S. Desplaines
Chicago, Ill. (See page 938.)
Hergi Mfg. Co., Bridgeport, Conn.
Hisey-Wolf Machine Co., Cincinnati, O.
Hus-Kee—See Stenman Electric Tool Co.
Ideal—See Nell & Smith Electric Tool Co.
Independent Pneumatic Tool Co., Chicago,
"Thor."
Jonas, C. N. & F. W., 608 S. Dearb-
St., Chicago, Ill. (Sales Representa-
tive for A. H. Petersen Mfg. Co., Milwaukee
Wis.) (See page 343.)
Jones, MacNeal & Camp, 522 S. Clinton
Chicago, Ill. "Power King."
Kesco One-Hand-Y—See Knight Engine-
& Sales Co.
Knight Engineering & Sales Co., 210
Seventh St., Los Angeles, Cal. "Ke
One-Hand-Y." (See page 504.)
Little Giant—See Chicago Pneumatic Tool
Nell & Smith Electric Tool Co., 813-15 Br-
way, Cincinnati, O. "Ideal."
Petersen Mfg. Co.—See Jonas, C. N. & F.
Petterson Engineering & Mfg. Co.—See I
banks Co.
Power King—See Jones, MacNeal & Camp
Racine Electric Co., Racine, Wis.
Rhy-Bon Electric Co., 626 W. Mad-
St., Chicago, Ill. (Dealers.)
(See page 741.)
Royal—See Dear Co.
Saphil Mfg. Co.—See Duntley-Dayton Co.
Standard Electric Tool Co., Cincinnati, O.
Stenman Electric Tool Co., 42 Southbridge
Worcester, Mass. "Hus-Kee."
Stewart—See Chicago Flexible Shaft Co.
Stow Flexible Shaft Co., 26th & Callo-
Sts., Philadelphia, Pa.
Stow Mfg. Co., Binghamton, N. Y.
Temco Electric Motor Co., 921 Sugar St.,
St. O.
Thor—See Independent Pneumatic Tool
U S—See United States Electrical Tool Co.
United States Electrical Tool Co., Cin-
cinnati, O. "U. S." (See page 367)
Van Dorn Electric Tool Co., 2978 Woc-
Rd., Cleveland, O.
Willey—See Clark, Jr., Electric Co.
Wisconsin Electric Co., 6923 16th St., R
Wis. "Dunmore."
Wodack Electric Tool Corp., 23-27 S. J
son St., Chicago, Ill.

**DRILLING MACHINES, Mul
Spindle**

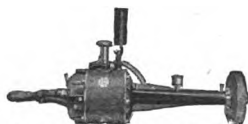
Bausch Machine Tool Co., Spring
Mass. (See page 607.)
Detroit Tool Co., 6443 St. Antoine St., De-
Mich.
Foote-Burt Co., 4101 St. Clair Ave., Clev-
O.
Fox Machine Co., 1811 W. Ganson St., Jac
Mich.
Hole Hog—See Moline Tool Co.
Moline Tool Co., 319 20th St., Moline, Ill.
Hog."
Natco—See National Automatic Tool Co.
National Acme Co., Cleveland, O.
(See page 667.)
National Automatic Tool Co., S. Sever
N Sts., Richmond, Ind. "Natco."
Pecorp—See Providence Engineering C
Pratt & Whitney Co., 111 Broad-
New York, N. Y. (See page 373.)
Providence Engineering Corp., 621 S. Ma
Providence, R. I. "Pecorp."

Everything is listed under the NOUN or principal word

U. S. Electrical TOOLS



Universal Motor Drill.
1/2 in. Direct or alternating
current, 60 cycle or less.



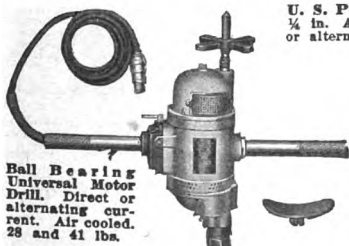
U. S. Portable Grinder.
Direct or alternating current.
Air cooled.



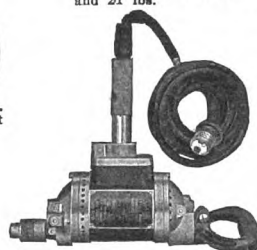
U. S. Portable Grinder.
1/2 hp. Direct
or alternating current. 18
and 21 lbs.



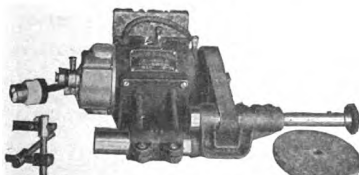
U. S. Portable Drill.
1/4 in. Air cooled. Direct
or alternating current.



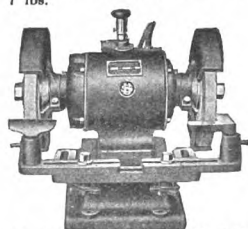
Ball Bearing Universal Motor Drill. Direct or alternating current. Air cooled. 28 and 41 lbs.



Ball Bearing Universal Motor Drill. Direct or alternating current. Air cooled. 6 and 7 lbs.



High Speed Internal Grinder. Vertical adjustment 5 in. Air cooled. Direct or alternating current of 2 or 3 phases.



U. S. Ball Bearing Bench Grinder. 1 and 2 hp. Direct or alternating current. Pedestal furnished extra.

New York Office, 50 Church St., Boston Office, 12 Pearl St., Chicago Office, 5 E. Michigan St.

Works, Cincinnati, Ohio.

The United States Electrical Tool Co.

Write for Complete Catalogue on Portable Tools

Please mention The Automobile Trade Directory

DRILLS, PNEUMATIC—See Tools, Pneumatic**DRILLS, PORTABLE—See Drills, Grinders and Polishes, Electric Portable****DRILLING MACHINES, Radial**

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
 Bauah Machine Tool Co., Springfield, Mass. (See page 607.)
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Cariton Machine Tool Co., Spring Grove Ave. & Meeker St., Cincinnati, O.
 Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
 Drees Machine Tool Co., 227-29 W. Micken Ave., Cincinnati, O.
 Foodick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
 Hammond Mfg. Co., 5545 Carnegie Ave., Cleveland, O.
 Hilbert Machine Co., 2116-22 Colerain Ave., Cincinnati, O.
 Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
 Mueller Machine Tool Co., 2425-29 Colerain Ave., Cincinnati, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Reed-Prentice Co., 53 Franklin St., Boston, Mass.
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Western Machine Tool Works, Holland, Mich.

DRILLS, Ratchet

Armstrong Bros. Tool Co., 204 N. Francisco Ave., Chicago, Ill. (See page 357.)
 Atha Tool Co., Chapel St., Newark, N. J.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Packer."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Diamond—See Whitman & Barnes Mfg. Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Hunter Machine Co., Jas., 16 Main St., North Adams, Mass.
 Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y.
 Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
 Lutz Co., Morris, Hambrey & Moore Sts., Philadelphia, Pa. (See page 293.)
 Millers Falls Co., Millers Falls, Mass. "Star."
 Oswego Tool Co., 119-27 W. First St., Oswego, N. Y. "Packer."
 Packer—See Billings & Spencer Co.
 Packer—See Oswego Tool Co.
 Parker Co., Charles, 48 Elm St., Meriden, Conn.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Renshaw." (See page 373.)
 Renshaw—See Pratt & Whitney Co.
 Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 365.)
 Star—See Millers Falls Co.
 Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond."

DRILLING MACHINES, Sensitive

Avey Drilling Machine Co., Cincinnati, O.
 Burke Machine Tool Co., Sandusky St., Connecticut, O.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."
 Cerbin-Church Co., New Britain, Conn.
 Fox Machine Co., 1811 W. Gauson St., Jackson, Mich.
 Henry & Wright Mfg. Co., 760 Windsor St., Hartford, Conn. "Wright."
 Hoyrardt & Case, 131 Cornell St., Kingston, N. Y.
 Langsler Mfg. Co., 51 Washington Ave., Arlington Cranston, R. I.
 Leland-Gifford Co., 1025 Southbridge St., Worcester, Mass.
 Meyers—See Superior Engineering Works.
 Meyers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.
 North Wales Machine Co., Elm Ave & Center St., North Wales, Pa.
 Pecorp—See Providence Engineering Corp.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Providence Engineering Corp., 521 S. Main St., Providence, R. I. "Pecorp."
 Reed Co., Francis, 48 Hammond St., Worcester, Mass.
 Reed-Prentice Co., 53 Franklin St., Boston, Mass.
 Rockwell—See Ryerson & Son.
 Ryerson & Son, Joseph T., Chicago, Ill. "Rockwell."
 Sipp Machine Co., Keen & Warren Sts., Paterson, N. J.
 Stapf & Co., John B., Dunkirk, N. Y.
 Superior Engineering Works, Small Bldg., York, Pa. "Meyers."
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.
 Washburn Shops, Boynton St., Worcester, Mass.
 Willey—See Clark, Jr., Electric Co.
 Wright—See Henry & Wright Mfg. Co.

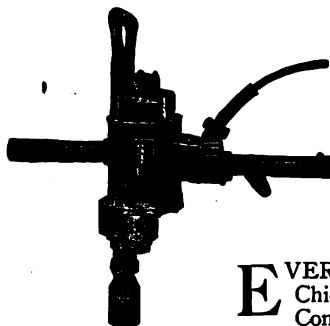
DRILLS, TAPPING—See Drills, Upright**DRILLS, Twist**

Alvord Reamer & Tool Co., Millersburg, Pa. (See page 835.)
 American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampeco."
 American Twist Drill Co., W. Jefferson Ave. & 21st St., Detroit, Mich.
 Ampeco—See American Machine Products Co.
 Blanche Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanche Twist Drill & Tool Co., Taunton, Mass.)
 Blanche Twist Drill & Tool Co.—See Blanche Co.
 Buckeye Twist Drill Co., Elm St., Alliance, O.
 Cleveland Twist Drill Co., Cleveland, O. "Paragon." (See page 365.)
 Colton Co., Arthur, 2500 E. Jefferson Ave., Detroit, Mich. "Colton-Detroit."
 Colton-Detroit—See Colton Co.
 Detroit Twist Drill Co., Detroit, Mich. (See page 777.)
 Diamond—See Whitman & Barnes Mfg. Co.
 Lincoln Twist Drill Co., Arlington St., Taunton, Mass.
 McCarthy Drill & Tool Corp., 20 Church St., New York, N. Y.

Everything is listed under the NOUN or principal word

QUALITY *and* SERVICE

A built-in part of these tools



Little Giant Electric Drills

Powerful, dependable, durable. Made in several sizes for operation on A.C., D.C. or "Universal" current.



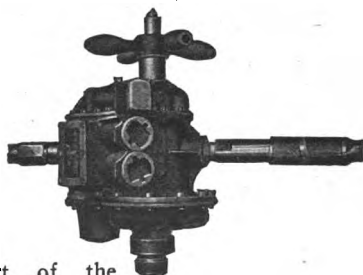
**Little Giant Electric
"Midget" Drills**

Speedy little labor-savers,
useful for countless drill-
ing and screw-setting
operations.



Little Giant "Close Quarters" Air Drill

Quarters Aw Drills
Indispensable for drilling, reaming and tapping operations in corners and close quarters. A powerful speedy drill for general purposes.



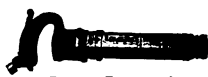
Little Giant Air Drills

Over 100,000 now in service the world around. Made in a complete line for drilling, reaming, tapping, screw-setting, wood boring, etc.



Little Giant Portable Electric Grinders

Available in many styles for flat surface, external and internal grinding operations, and for operation on either A.C., D.C. or "Universal" current.



Boyer Pneumatic Hammers

Standard the world over for riveting, chipping, calking, flue-beading, scaling, etc. Boyer Riveters are also made for pedestal, yoke and jam riveting operations.

EVERY product of the Chicago Pneumatic Tool Company embodies a built-in *quality* of design and workmanship necessary for it to bear its name. Superior performance and longer service are consequent advantages of this production standard.

The Portable Electric and Pneumatic Tools here illustrated are available in complete lines embracing various sizes and capacities. Many thousands of representative users the world over are their best advertisement.

All "Chicago Pneumatic" products or parts and maintenance service therefor may be obtained without delay from any of the district offices and service stations listed below, where they are carried constantly in stock.

Write for Bulletins.

Chicago Pneumatic Tool Co., 6 East 44th Street, New York City

District Offices and Service Stations

REGIONAL OFFICES AND SERVICE CENTERS

BIRMINGHAM BOSTON BUFFALO	CINCINNATI CLEVELAND DETROIT	EL PASO EL PASO	JOPLIN LOS ANGELES	INDIANAPOLIS NEW YORK PHILADELPHIA	PITTSBURGH PORTLAND RICHMOND	SALT LAKE CITY SAN ANTONIO SEATTLE	ST. LOUIS	BOMBAY CHENNAI COCHIN	KARACHI KOLKATA MUMBAI	NEW DELHI PUNE	CHENNAI COCHIN MUMBAI	MONTREAL OTTAWA PARIS	SEUL SINGAPORE TOKYO	TAIPEI TOKYO VANGUOVER
---------------------------------	------------------------------------	--------------------	-----------------------	--	------------------------------------	--	-----------	-----------------------------	------------------------------	-------------------	-----------------------------	-----------------------------	----------------------------	------------------------------

BOYER PNEUMATIC HAMMERS · ROCK DRILLS · COAL DRILLS

LITTLE GIANT PNEUMATIC TOOLS • LITTLE GIANT ELECTRIC TOOLS

CHICAGO

Depend Upon



PNEUMATIC

that Name

CHICAGO PNEUMATIC AIR COMPRESSORS AND VACUUM PUMPS

GIANT FUEL OIL GAS GASOLINE AND STEAM ENGINES

Please mention The Automobile Trade Directory

DRILLS, Twist (Continued)

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.
 New Process Twist Drill Co., 34 Court St., Taunton, Mass.
 Norka—See Whitman & Barnes Mfg. Co.
 Paragon—See Cleveland Twist Drill Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 365.)
 Rich Steel Products Co., Springfield Pl., Battle Creek, Mich.
 Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1170.)
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Syracuse Twist Drill Co., 938 Grape St., Syracuse, N. Y.
 Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.
 Whitaker Mfg. Co., Chicago, Ill. (See page 1076.)
 Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Norka," "Diamond."

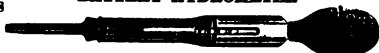
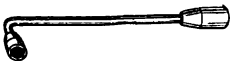
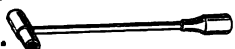
DRILLING MACHINES, Upright

Aurora Tool Works, Aurora, Ind.
 Baker Bros., Westlake Ave. & Post St., Toledo, O.
 Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.
 Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Champion Mfg. Co., 2908-10 W. Fletcher St., Philadelphia, Pa. (See page 1025.)
 Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
 Colburn Machine Tool Co., 1038 Ivanhoe Rd., Cleveland, O.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
 Economy—See Rockford Lathe & Drill Co.
 Foodick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
 Hilbert Machine Co., 2116-23 Colerain Ave., Cincinnati, O.
 Hoefer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.
 Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.
 Kokomo—See Superior Machine Tool Co.
 Mill City Co., Minneapolis, Minn.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Reed-Prentice Co., 53 Franklin St., Boston, Mass.
 Rockford Lathe & Drill Co., Rockford, Ill. "Economy."
 Rockford Drilling Machine Co., ft. Catherine St., Rockford, Ill.
 Sibley Machine Co., 204-32 E. Tutt St., South Bend, Ind.
 Snyder & Son, J. E., Worcester, Mass.
 Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind. "Kokomo."
 Taylor & Fenn, 54-70 Arch St., Hartford, Conn.
 Tschudi-McBarron Machine Co., Dayton, O.

DRIP COCKS—See Cocks**DRIP PANS—See Pans, Drip****DRIVE SHAFT BEARING END MILLS FOR FORDS—See Mills, Dry Shaft Bearing End****DRIVE GEAR BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller****DRIVE SHAFT BUSHING REAMERS FOR FORDS—See Reamers.****DRIVE SHAFT HOUSING BRACES FOR FORDS—See Braces, Drive Shaft Housing****DRIVE SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady****DRIVE SHAFTS—See Shafts, Propeller****DRIVERS, Screw**

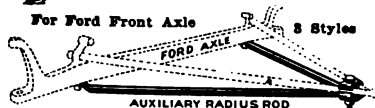
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill.
 Auto Forge Sales Co., 80 King Ave., Columbus, O. "Columbus."
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Braundorf-Mueller Co., 205 Madison St., Elizabeth, N. J. "New Century," "O. K.," "Ideal."
 Bridgeport Hardware Mfg. corp., 461 Iranistan Ave., Bridgeport, Conn. "Challenge," "Heracles," "Matchless."
 Buffum Tool Co., Louisiana, Mo. (See page 395.)
 C-S Co.—See Chapins-Stephens Co.
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Cassady-Fairbank Mfg. Co., 6126 S. La Salle, Chicago, Ill.
 Challenge—See Bridgeport Hardware Mfg. Corp.
 Champion—See Union Hardware Co.
 Chapin-Stephens Co., Pine Meadow, Conn. "C-S Co.," "Elmore."
 Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
 Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.
 Columbus—See Auto Forge Sales Co.
 Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Hamr-Handl."
 Dahl, J. L.—See Arrow Specialty Co.
 De Lisser Mfg. & Export Corp., 309 Broadway, New York, N. Y. (Sole Distributors for Hergl Mfg. Co., Bridgeport, Conn.)
 Dikeman Mfg. Co., Merwin St., Norwalk, Conn.
 Disston Sons, Henry, (Tacony) Philadelphia, Pa.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Four-in-One."
 Elmore—See Chapin-Stephens Co.
 Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
 Four-in-One—See Edelmann & Co.
 Gay, Geo. E., Augusta, Me.
 Giant—See Tuck Mfg. Co.
 Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
 Goodell-Pratt Co., Greenfield, Mass.
 Hamr-Handl—See Crescent Tool Co.
 Hargrave—See Cincinnati Tool Co.

Everything is listed under the NOUN or principal word

ARMAND**AUTOMOTIVE ACCESSORIES****SOLD THROUGH JOBBERS****EXTRA
FLOATS****BATTERY HYDROMETER****BATTERY FILLER**Rubber Bulb and Stem
8 Oz. Bulb**SCREW****DRIVER****SOCKET WRENCHES
FOR FORD CARS**Connecting Rod
Wrench No. 6280Single-end Cylinder
Head Wrench No. 6210**FOUR-TO-A-SET****TOOL STEEL BLADES**Double-end Cylinder
Head Wrench No. 6260Triple-end Cylinder
Head and Rear Axle
Housing Wrench
No. 6300**SIXSET**
ARMAND-CHICAGO**TRIO****THREE-TO-A-SET**Socket Wrench
Handle
No. 8200**BALL JOINTS
FOR FORD CARS**No. 8590-87
1 1/2" x 2 1/2"
Cold Rolled
Steel**AUXILIARY RADIUS RODS**

For Ford Front Axle

3 Styles



AUXILIARY RADIUS ROD

SPARK INTENSIFIERS**WILLSPARK**

FOR ALL CARS

WRITE FOR PRICES AND DISCOUNTS

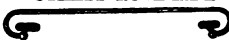
ARMAND MACHINE WORKS, Inc.
CHICAGO

443-450 North Wells Street

ILLINOIS

ARMAND

Please mention The Automobile Trade Directory

ARMAND**SIXSET**Twelve Openings
7/32" to 9/16"
6 WrenchesMade of Cold Rolled
Steel. Nickel-plated,
Polished or Case Hard-
ened. Mottled Finish.**UTILITY ROBE-RAIL**Solid steel bar. Length
20". 7/16" dia. Black
enamel.**PISTON RING
COMPRESSOR**

For all cars

DRIVERS, Screw (Continued)

Harrold Tool & Forge Co.—See Wilbusch & Hilger.

Herbrand Co., 109-35 E. State St., Fremont, O.

Hercules—See Tuck Mfg. Co.

Hercules—See Bridgeport Hardware Mfg. Corp.

Hergi Mfg. Co., Bridgeport, Conn.

Hurwood—See Stanley Works.

Ideal—See Braunsdorf-Mueller Co.

Ives Mfg. Co., W. A., Wallingford, Conn. "Mephisto."

Jiffy—See Shultis Automotive Corp.

Lipscomb—See Ellis Co.

M-B Tool Co., Danvers, Conn.

Marcy Tool Works, Putnam, Conn.

Matchless—See Bridgeport Hardware Mfg. Corp.

Mayhew Steel Products Co., 251 Broadway, New York, N. Y. "Perpetuo," "Peerless."

Mephisto—See Ives Mfg. Co.

Millers Falls Co., Millers Falls, Mass. "Star."

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 1011.)

Never Break—See S. & I. Co.

New Century—See Braunsdorf-Mueller Co.

North Bros. Mfg. Co., American St. & Lehigh Ave., Philadelphia, Pa. "Yankee."

O. K.—See Braunsdorf-Mueller Co.

Ohio Tool Co., Charleston, W. Va.

Osborne & Co., C. S., Newark, N. J.

Peck, Stow & Wilcox Co., Southington, Conn. "Fexto," "Solbar."

Peerless—See Mayhew Steel Products Co.

Perfect Handle—See Smith & Co.

Perpetuo—See Mayhew Steel Products Co.

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

Reliable—See S. & I. Co.

Rival—See S. & I. Co.

S. & I. Co., 55-57 Governor St., Springfield, Mass. "Never Break," "Reliable," "Rival."

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Dahl, J. L., Hackensack, N. J. "Jiffy.")

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Snell Mfg. Co., Fiskdale, Mass.

Solbar—See Peck, Stow & Wilcox Co.

Southern Machine & Tool Co.—See Tuthill Sales Co.

Stanley Works (Special Productions Dept.), New Britain, Conn. "Hurwood." (See page 491.)

Star—See Millers Falls Co.

Starrett Co., L. S., Athol, Mass.

Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.

Swan & Co., Jas., 279 Bank St., Seymour, Conn.

Tuck Mfg. Co., 74 Ames St., Brockton, Mass. "Hercules," "Giant."

Tuthill Sales Co., St. Louis, Mo. (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo.) (See page 641.)

Union Hardware Co., Torrington, Conn. "Champion," "Valley."

Union Tool Co., 48 E. River St., Orange, Mass.

Valley—See Union Hardware Co.

Vichek Tool Co., Cleveland, O.

Whitaker Mfg. Co., Chicago, Ill. (See page 1075.)

Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

Yankee—See North Bros. Mfg. Co.

DRIVERS, SHAFT, FOR FORDS—See Mills, Dry Shaft Bearing End**DRIVING CHAIN—See Chain, Transmission; also Chain, Motorcycle Driving****DRIVING GEARS FOR FORDS—See Gears, Special Ratio****DROP FORGED WRENCHES—See Wrenches, Nut and Bolt****DROP FORGINGS—See Forgings, Drop****DROP HAMMERS—See Hammers, Power****DRUM CLAMPS FOR FORDS—See Clamps or Vises, Transmission Drum Repairing****DRUM HOLDERS, TRANSMISSION for FORDS—See Holders or Stocks, Transmission Drum****DRUMS, BRAKE—See Drums, Pressed Steel Brake****DRUMS, Pressed Steel Brake**

(See also Stampings, Metal; for Cast Drums—See Castings)

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Bossert Corp., Utica, N. Y. (See page 887.)

Brewer Tichener Corp., Cortland, N. Y. (See page 573.)

Crosby Co., Buffalo, N. Y. (See page 893.)

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 891.)

Globe Machine & Stamping Co., Cleveland, O. (See page 1089.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 421.)

Kelsey Wheel Co., Detroit, Mich. (See page 1061.)

Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Maryland Metal Products Co., Hagerstown, Md.

Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.

Milwaukee—See Pressed Steel Tank Co.

Parish & Bingham Corporation, Cleveland, O.

Powell Pressed Steel Co., Hubbard, O. (See page 893.)

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 889.)

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.

Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

DRY BATTERIES—See Batteries, Dry**DRY BATTERY CONNECTORS—See Connectors, Dry Battery****DRYING ROOMS—See Rooms, Paint**

Everything is listed under the NOUN or principal word

PRATT & WHITNEY

Precision Machine Tools

Pratt & Whitney Precision Machine Tools include a large variety of machines used in the automobile industry. They have long been recognized for their superiority in design and workmanship.

Bench Lathes
Engine Lathes
Turret Lathes
Hand Screw Machines
Hand Milling Machines
Automatic Milling Machines
Thread Milling Machines

Spline Milling Machines
Die Sinking Machines
Surface Grinding Machines
Multiple Spindle Drilling Machines
Sensitive Drilling Machines
Profiling Machines
Vertical Shapers

Machinists' Small Tools

No effort or expense has been spared in the manufacture of Machinists' Small Tools to obtain the necessary refinement and accuracy.

Taps
Dies
Die Stock Sets
Milling Cutters
Reamers
Punches and Dies

Drills
Taper Pins
Lathe Mandrels
Threading Tools
Knurling Tools
Lathe and Planer Tools

Hand Chasers
Hollow Mills
Counterbores
Forming Tools
Hobs
Special Tools to Order

Standards and Gauges

As a result of their exceptional accuracy Pratt & Whitney Standards and Gauges have been recognized as the predominant influence in the standardization of the machine tool industry.

Plug and Taper Gauges
Snap Gauges
Taper Gauges
Thread Gauges

Pipe Thread Gauges
Measuring Machines
End Measures
Dial Indicators, Etc.

Correspondence Invited

PRATT & WHITNEY CO.

GENERAL OFFICES, 111 BROADWAY, NEW YORK
WORKS, HARTFORD, CONNECTICUT

OFFICES AND AGENCIES CARRYING P. & W. SMALL TOOLS IN STOCK

NEW YORK.....326 Hudson St.
BOSTON.....93-95 Oliver St.
PHILADELPHIA.....405 N. 21st St.
CLEVELAND.....730 Superior Ave.
DETROIT.....Kerr Bldg.
CHICAGO.....571 W. Washington Blvd.
ST. LOUIS.....516 North 3rd St.

CINCINNATI.....328 W. Fourth St.
BIRMINGHAM, ALA.....2015 First Ave.
NEW ORLEANS, LA.....C. T. Paterson Co., Ltd.
SAN FRANCISCO.....16-18 Fremont St.
ST. PAUL, MINN.....Robinson, Cary & Sands Co.
DENVER, COLO.

Headrie & Bolthoff Mfg. & Supply Co.

Please mention The Automobile Trade Directory

DUCK, ENAMELED—See Cloth, Enameled

DUMMY EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

DUMMY RADIATORS FOR FORDS—See Hoods, Radiator

DUMPING BODIES—See Bodies, Special Dumping; also Bodies, Automatic Dumping, for Fords

DUST CAPS—See Caps, Tire Valve Dust

DUST PANS—See Pans, Dust

DUST RINGS—See Washers, Felt

DUSTERS, MOTORISTS'—See Clothing, Motorists'

DYE, Top Lining

(For restoring or changing the color of top linings)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
(See page 363.)

Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Blak."

Auto Specialties Mfg. Co., Buffalo, N. Y.
(See page 363.)

Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.

Be-Be-Co.—See Boston Blacking Co.

Benoit, Constant A., Brooklyn, N. Y.
(See page 227.)

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Columbus Varnish Co., Columbus, O.
(See page 361.)

Cov-R-Blak—See Auto Products Mfg. Co.

Dutch—See Van Cleef Bros.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker."
(See page 229.)

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Linsco—See Lins Mfg. Co.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Mansfield Mfg. Corp., 322 S. Clinton St., Syracuse, N. Y.

Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
(See page 277.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Nu-Stain—See Atlas Auto Supply Co.

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Red Line, Inc., Grand Rapids, Mich.
(See page 667.)

Rie-Nie—See Durkee-Atwood Co.

Silkup—See Arnold, N. B.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

DYNAMOMETERS, Electric Testing

(For testing the power of gasoline motors; see also Dynamometers, Hydraulic)

Alden, Geo. I., 48 Queen St., Worcester, Mass.
Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.

Sprague Electric Works, 527 W. 84th St., New York, N. Y.

DYNAMOMETERS, Hydraulic Testing

(For testing the power of gasoline motors; see also Dynamometers, Electric)

Burr Co., 714 N. Champaign St., Champaign, Ill. "Gulley."

Gulley—See Burr Co.

Herschell-Spillman Motor Co., North Tonawanda, N. Y.

Standard Motor Construction Co., 125 Pine St., Jersey City, N. J.

DYNAMOMETERS, Hydrostatic

(For testing draw-bar pull of Tractors; for Engines testing dynamometers—See Dynamometers, Electric; also Dynamometers, Hydraulic)

Froude—See Wheeler Mfg. Co.

Szekely Co., O. E., 1516 Fourth Ave., Moline, Ill.

Wheeler Mfg. Co., C. H., Philadelphia, Pa. "Froude."

DYNAMOS, BATTERY CHARGING—See Generators, Electric Lighting; also Dynamos and Motor Generators; also Systems, Electric Lighting

DYNAMOS and MOTOR GENERATORS, Battery Charging

(For Engines and Battery Charging Plants)

Acme Electric & Mfg. Co., 203 St. Clair St., N. E., Cleveland, O.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Cushman Electric Co., 43 S. Main St., Concord, N. H.

Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.

Electric Products Co., Cleveland, O.
(See page 375.)

Ellington Electric Co., 520-28 S. Fourth St., Quincy, Ill.

F-B Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.)

(See pages 619 to 622.)

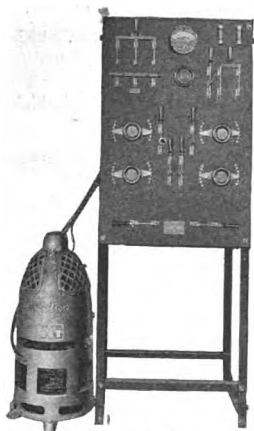
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

Globe-Electric Co., 14-28 Keefe Ave., Milwaukee, Wis.

H-B—See Hobart Bros. Co.

Hobart Bros. Co., Troy, O. "H-B."

Everything is listed under the NOUN or principal word



Wotton

Battery Station Chargers

Motor Generators 6 to 100 Amperes capacity. Economical in operation. Low upkeep cost.

One, two, four, or eight circuit switchboards—built in sections—additional circuits added when needed.

Each circuit separately controlled, giving charging rates to suit all batteries. Can be paralleled to obtain high rate for hurry-up charge.

Multiple circuit rheostats for direct current.

THE ELECTRIC PRODUCTS COMPANY
Cleveland, Ohio

OR YOUR NEAREST DISTRIBUTOR

Reinhard Bros. Co., Minneapolis, Minn.
Dyke Motor Supply Co., Pittsburgh, Pa.
Herring Motor Co., Des Moines, Iowa.
Automotive Electric Service Co., 118 E. 33rd St., Chicago, Ill.
The Cooper California Co., 1034 Geary St., San Francisco, Cal.
Electric Appliance Co., Dallas, Texas.
Albany Hdw. & Iron Co., Albany, N. Y.
Charleston Elec. Supply Co., Charleston, W. Va.
Commercial Elec. Supply Co., St. Louis, Mo.

Rumsey Electric Co., Philadelphia, Pa.
F. Hissell Co., Toledo, Ohio.
Fauver-Cavanagh Co., Detroit, Mich.
The Gibson Co., Indianapolis, Ind.
Electric Appliance Co., New Orleans, La.
Electric Appliance Co., Chicago, Ill.
Harrison Smith Co., Oklahoma City, Okla.
Harrison Smith Co., Dallas, Texas.
Interstate Electric Co., New Orleans, La.
Interstate Electric Co., Birmingham, Ala.

Pack Battery & Equipment Co., Kansas City, Mo.
Ward Engineering & Battery Co., Jacksonville, Fla.
Blanchard, Inc., Atlanta, Ga.
Michigan Tire & Accessories Co., Grand Rapids, Mich.
Penna. Rubber & Supply Co., Cleveland, Ohio.
The Cooper Co., Atlanta, Ga.
Auto Supply Co., Milwaukee, Wis.
I. J. Cooper Rubber Co., All branches.
Northern Electric Co., Montreal, Que., and all branches.

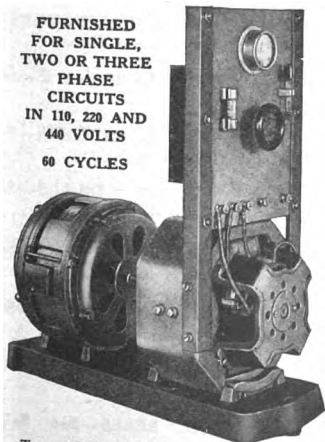
MOTOR GENERATOR SETS

For Charging Storage Batteries

Distributors



FURNISHED
FOR SINGLE,
TWO OR THREE
PHASE
CIRCUITS
IN 110, 220 AND
440 VOLTS
60 CYCLES



Type 6 G (10 Battery) complete, \$160.00
Type 9 G (20 Battery) complete, \$246.00

Prices—F. O. B.—St. Louis

Manufactured by

Valley Electric Company

3127 S. Kingshighway, St. Louis, Missouri

Willis Adams
Buffalo, N. Y.
Archer & Wiggins Co.
Portland, Ore.
Auto Equipment Co.
Denver, Colo.
Auto-Motive Service Co.
Des Moines, Iowa
Bonniwell-Galvin Iron Co.
Kansas City, Mo.
Child, Day & Churchill, Inc.
Spokane, Wash.
I. J. Cooper Rubber Co.
All Branches
Electric Service Co.
Cedar Rapids, Iowa
C. D. Franke & Co.
Charleston, S. C.
Star Machinery Co.
Seattle, Wash.
Inter-Mountain Electric Co.
Salt Lake City, Utah
Johnson Bros. Auto Supply Co.
Wichita, Kans.
J. D. Grant Co.
Fargo, N. D.
Lincoitt Supply Co.
Boston, Mass.
Louisville Auto Supply Co.
Louisville, Ky.
Edwin F. Merry
San Francisco, Cal.
Marshall-Wellis Co.
Duluth, Minn.
Minnesota Harness Factory
Winona, Minn.
Motor & Machinery Supply Co.
Kansas City, Mo.
Motor Equipment Co.
Wichita, Kans.

Nebraska Bulk Auto Co.
Lincoln, Neb.
Orgill Bros. & Co.
Memphis, Tenn.
Oxburn-Abston & Co.
Memphis, Tenn.
Peaslee Gaubert Co.
Louisville, Ky.
Pittsburgh Auto Equipment Co.
Pittsburgh, Pa.
Reinhard Bros.
Minneapolis, Minn.
Reynolds & Reynolds Co.
Tacoma, Wash.
Sieg Co.
Davenport, Iowa
Tisch Auto Supply Co.
Grand States Rubber Co.
United States Rubber Co.
All Branches
Utz Electric Shop
St. Joseph, Mo.
Walte Auto Supply Co.
64 Exchange Pl.
Providence, R. I.
Wm. Warneck Co.
Sioux City, Iowa
Washington Auto Supply Co.
Washington, Ill.
Western Rubber & Supply Co.
Los Angeles, Cal.
John V. Wilson Co.
Boston, Mass.

CANADA
R. E. T. Phipps, Ltd.
208 Tyrrell Bldg.
Toronto, Ontario

Please mention The Automobile Trade Directory

DYNAMOS and MOTOR GENERATORS, Battery Charging (Continued)

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.
 Kendrick & Davis Co., Lebanon, N. H.
 Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
 Langstadt-Meyer Co., 787 College Ave., Appleton, Wis.
 Main Electric Co., Cleveland, O.
 Martin—See Northwestern Electric Co.
 Northwestern Electric Co., 611-15 W. Adams St., Chicago, Ill. "Martin."
 Robbins & Myers Co., Springfield, O.
 Sprague Electric Works, 537 W. 34th St., New York, N. Y.
 Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
 Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 375.)
 Western Electric Co., 110 Williams St., New York, N. Y.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

DYNAMOS, ELECTRIC LIGHTING AND BATTERY CHARGING—See Generators, Electric Lighting and Battery Charging.

DYNAMOS, ELECTRIC TRACTOR LIGHTING—See Generators, Tractor Electric

DYNAMOS, IGNITION—See Magnets, Ignition

DYNAMOS, Motor Boat Electric Lighting

A-C Electrical Mfg. Co., U. B. Bldg., Dayton, Ohio.
 Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Nicolite."
 Leeco-Neville Co., 5363 Hamilton Ave., Cleveland, O.
 Nicolite—See Arrow Mfg. Co.

DYNAMOS, MOTORCYCLE ELECTRIC LIGHTING—See Generators, Motorcycle Electric Lighting

ECONOMIZERS, FUEL—See Mixers or Agitators, Fuel

ELBOWS, PIPE—See Fittings, Pipe

ELECTRIC BELLS—See Bells, Electric

ELECTRIC BRAKES—See Brakes, Electric

ELECTRIC CIGAR LIGHTERS—See Lighters, Electric Cigar

ELECTRIC CONDENSERS—See Condensers, Electric

ELECTRIC DRILLS—See Drills, Grinders and Polishers, Electric Portable

ELECTRIC ENGINE STARTERS—See Starters, Electric Engine

ELECTRIC FUSES—See Fuses, Electric

ELECTRIC GARAGE DOOR OPENERS—See Openers, Electric Garage Door

ELECTRIC HEADLIGHTS—See Headlights, Electric

ELECTRIC HORNS—See Horns, Electric

ELECTRIC LAMP ADAPTERS—See Adapters—Electric Lamp

ELECTRIC LAMP CONNECTORS—See Connectors, Electric Lamp

ELECTRIC LAMP SOCKETS—See Sockets, Electric Lamp

ELECTRIC LAMPS—See Lamps, Electric

ELECTRIC LIGHTING DYNAMOS—See Generators, Electric Lighting

ELECTRIC LIGHTING GENERATORS—See Generators, Electric Lighting

ELECTRIC LIGHTING SYSTEMS—See Systems, Electric Lighting

ELECTRIC LOCK SWITCHES—See Locks, Switch and Coil

ELECTRIC MIXTURE HEATERS—See Heaters, Mixture

ELECTRIC MOTOR COMMUTATORS—See Commutators, Electric Motor

ELECTRIC MOTORS—See Motors, Electric Automobile

ELECTRIC PORTABLE BUFFERS—See Drills, Electric Portable

ELECTRIC PORTABLE DRILLS—See Drills, Electric Portable

ELECTRIC PORTABLE GRINDERS—See Drills, Electric Portable

ELECTRIC PORTABLE POLISHERS—See Drills, Electric Portable

ELECTRIC SERVICE STATIONS—See Stations, Electric Service

ELECTRIC SIGNAL BELLS—See Bells, Electric

ELECTRIC SIGNS—See Signs, Electric

ELECTRIC SPEEDOMETER LAMPS FOR FORDS—See Lamps, Electric Speedometer

Everything is listed under the NOUN or principal word

AUDITS, SYSTEMS, INCOME TAX REPORTS

E. J. HOLMES & COMPANY

Certified Public Accountants—Auditors

WESTMINSTER BUILDING, 110 S. DEARBORN STREET, CHICAGO, ILLINOIS

Annual and
Special AuditsFinancial and
Cost SystemsIncome Tax Audits
and Investigations

CLIENTS SERVED IN ALL PARTS OF THE UNITED STATES

**Our Stock List Reads
Like a Directory of
Body Material**

From the Great Lakes to Hampton Roads we have the largest and most complete stock of body material, assuring quick service and through volume low prices.

Our representatives and office are always at your service.

Write for prices before ordering elsewhere.

Anti Rattles	Wood	Snap
Anti Rattles	Top	Springs
Bindings	Upholstery	Sockets
Bendings	Toilet & Card	Straps
Bows	Sheets	Tacks
Buttons	Enamel	Thread
Cases	Rubber	Window
Celluloid	Top	Car Door
Cloth	Curtain	Body
Cloth	Upholstering	Running Board
Dressings	Top	Windshield
Fasteners	Door	Curtain
Hair	Body & Top	Curtain
Handles	Slat	Fasteners
Hinges	Curtain	Seat
Irons	Locks	Bow
Irons	Mouldings	Leather
Lights	Mouldings	Upholstering
Door	Mouldings	Top & Upholstering
Window	Openers	Glass & Curtains
Upholstery	Rollers	

CORNELIUS TEN EICK

INCORPORATED

AUTOMOBILE BODY MATERIAL

23 West 47th Street, New York City

**THE BUCKWALTER
CONNECTING ROD
ALIGNING DEVICE**

REPAIRMEN: You realize that for A-1 results you must test and align every rod—on every motor you overhaul. The Buckwalter Aligning device is the quickest and most accurate tool for the purpose ever devised. Shows in a second to the thousandth of an inch any inaccuracy in a connecting rod. Nine bushings furnished with the tool enable you to test any size rod. So simple in operation that even an inexperienced mechanic can straighten connecting rods accurately and quickly.

Carefully made to insure absolute accuracy and stability.

JOBBERs: There is still some good territory open for progressive distributors. Full information on request.

JOHN S. BUCKWALTER CO.
413-415 N. Mary St., Lancaster, Penna.

Organized
1853**SERVICE UNSURPASSED**

ELBRIDGE G. SNOW, President

**THE HOME
INSURANCE COMPANY
NEW YORK**Cash Capital
\$6,000,000

AIRCRAFT, AUTOMOBILE (COMPLETE COVER IN COMBINATION POLICY), EARTHQUAKE, EXPLOSION, FIRE AND LIGHTNING, HAIL, MARINE (INLAND AND OCEAN), PARCEL POST, PROFITS AND COMMISSIONS, REGISTERED MAIL, RENTS, RENTAL VALUES, RIOT AND CIVIL COMMOION, SPRINKLER LEAKAGE, TOURISTS' BAGGAGE, USE AND OCCUPANCY, WINDSTORM.

STRENGTH

REPUTATION

SERVICE

Please mention The Automobile Trade Directory

ELECTRIC STARTERS—See Starters, Electric

ELECTRIC STATIONS—See Stations, Electric Service

ELECTRIC TEST STANDS—See Stands, Electric Test

ELECTRIC TESTING INSTRUMENTS—
See Instruments, Electrical Circuit Testing

ELECTRIC TIRE BUFFING MACHINES—
See Machines, Electric Tire Buffing.

ELECTRIC TRACTOR HEADLIGHTS—
See Headlights, Tractor Electric

ELECTRIC WELDING—See Welding, Electric

ELECTRIC WELDING MACHINES—See
Machines, Electric Welding

ELECTRIC WIRING CHARTS—See Charts,
Electric Wiring

ELECTRICAL CIRCUIT TESTING INSTRUMENTS—
See Instruments, Electrical Circuit Testing

ELECTRICAL TEST CLIPS—See Clips,
Electrical Test

ELECTRICAL TESTING INSTRUMENTS—
See Instruments, Electrical Circuit Testing

ELECTRICAL TROUBLE CHARTS—See
Charts, Electric Wiring

ELECTRICALLY HEATED CLOTHING—
See Clothing, Electrically Heated Aviator

ELECTRICALLY WOUND CLOCKS—See
Clocks, Electrically Wound

ELECTROLYTE, Storage Battery

Contact Process Co., Abbott Rd., Buffalo, N. Y.

Du Pont de Nemours & Co., 120 Broadway, New York, N. Y.

Grasselli Chemical Co., Guardian Bldg., Cleveland, O.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 379.)

ELEVATING ATTACHMENTS FOR FORDS—See Brackets, Timer Elevating

ELEVATING BODIES—See Bodies, Special Dumping

ELEVATING BRACKETS FOR FORDS—
See Brackets, Timer Elevating

ELEVATORS, Garage

Brodeur Mfg. Co., Burlington & Well Sts., Milwaukee, Wis.

Buchanan Mfg. Co., 37 Van Rensselaer St., Eldorado, Ill.

Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.

Eaton & Prince Co., Chicago, Ill.

Haughton Elevator & Machine Co., 671-93 Spencer St., Toledo, O.

Kleckhefer Elevator Co., A., 1026-1104 St. Paul Ave., Milwaukee, Wis.

Kimball Bros. Co., Ninth St. & 11th Ave., Council Bluffs, Ia.

McLouthlin Co., Geo. T., Boston, Mass.

Otis Elevator Co., 11th Ave. & 26th St., New York, N. Y.

Reedy Elevator Co., Willow Ave. & 13th St., Hoboken, N. J.

Reedy Elevator Mfg. Co., J. W., Chicago, Ill.

Sedgwick Machine Works, 128 Liberty St., New York, N. Y.

Sidney Elevator Mfg. Co., Main & Shelby Sts., Sidney, O.

Spedel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.

Storm Mfg. Co., 40-50 Vesey St., Newark, N. J.

Warner Elevator Mfg. Co., 2600 Alford St., Cincinnati, O.

EMBLEM HOLDERS—See Holders, Flag, Pennant and Emblem

EMBLEMS OR FLAGS—See Flags, Pennants and Emblems

EMERGENCY CASES—See Cases, Medical

EMERGENCY CONTRACTING BRAKES FOR FORDS—See Brakes, Emergency Contracting

EMERGENCY GEAR LEVER LOCKS FOR FORDS—See Locks, Emergency Gear Lever

EMERGENCY REAR AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

EMERGENCY RIMS FOR FORDS—See Rims, Emergency

EMERGENCY ROPES—See Ropes, Tow

EMERGENCY TANKS—See Tanks, Emergency

EMERY CLOTH—See Paper, Emery and Sand

EMERY PAPER—See Paper, Emery and Sand

EMERY, POWDERED—See Compounds, Valve Grinding

EMERY WHEEL DRESSERS—See Dressers, Emery Wheel

EMERY WHEELS—See Wheels, Grinding

EMPLOYMENT AGENCIES—See Agencies, Employment

ENAMEL REMOVERS—See Removers, Paint, Enamel and Varnish

Everything is listed under the NOUN or principal word



Cinch

Curtain Fasteners

A BETTER fastener in every way. Already adopted as standard equipment on some of America's finest cars. Write for descriptive matter.

Cinch Fastener Corp.
2335 West Van Buren Street, Chicago

PURE ELECTROLYTE

For Storage Batteries



We were not only the first to manufacture pure Electrolyte—but we were the first to realize that the Automobile trade was really in need of a

"Standard Electrolyte Product"

Therefore we once and for all put a standard of value on every gallon of Electrolyte we manufacture.

Every gallon is made to a definite formula. This insures long life to Storage Batteries, and a quick and ready response to the call for power.

For your own protection send your Electrolyte orders to us.

THE KALBFLEISH CORP.
31 Union Square West
NEW YORK

SNEAD CUSHION DRIVE



Resilient, flexible power transmission without lubrication, noise or back lash. Write for data on universal joints and propeller shafts.

Takes the Self-Destruction Out of Your Car

SNEAD & COMPANY, Jersey City, N. J.

FOUNDED 1849

VARNISH DRYROOMS

WE GUARANTEE

—FOR—
AUTOMOBILE
BODIES
CHASSIS
WHEELS

A Better Quality Finish
Quicker Results
Saving in Floor Space
and Working Capital

—FOR—
MOTOR
TRUCKS
and
TRACTORS

DRYING SYSTEMS, Inc.

11-17 So. Desplaines St.

CHICAGO, ILLS.

Please mention The Automobile Trade Directory

ENAMELED CLOTH—See Cloth, Enameled

ENAMELED SIGNS—See Signs, Enameled

ENAMELS, AUTOMOBILE—See Paints, Enamel

ENAMELS, Lacquers and Finishes, Brass

(For blackening kumpe, radiator and other brass work on car—See also *Paints, Enamel*; also *Lacquers, Metal*)

Ad-el-ite—See Adams & Mitting Co.

Adams & Mitting Co., 718-28 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."

Auto Products Mfg. Co., Buffalo, N. Y. "Ev-R-Sta."

Bay State—See Wadsworth, Howland & Co.

Belrok—See Wadsworth, Howland & Co. Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)

Bergh Specialty Co., 1435 McCadden Pl., Los Angeles, Cal.

Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn.

Blue Ribbon—See International Metal Polish Co.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "C. Q. P."

C. Q. P.—See Bradley & Vrooman Co.

Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.

Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill.

Cleveland Varnish Co., Cleveland, O. (See page 1027.)

Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)

Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers."

Dibble Color Co., 445 Larned St., W., Detroit, Mich.

Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Elmendorf Varnish Co., 841 Larrabee St., Chicago, Ill.

Enameling & Stamping Corp. of N. Y., Second & Webster Aves., Long Island City, N. Y.

Ev-R-Sta—See Auto Products Mfg. Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Jet-Lac." (See page 229.)

Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Jet-Lac—See Hall-Thompson Co.

Jewel—See Wadsworth-Howland Co.

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Leath-R-Nu—See Nu-Back Mfg. Co.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

National Rubber & Specialties Co., 4421-33 Chickering Ave., Cincinnati, O. "Red Cross." Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co. Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Leath-R-Nu."

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Peerless—See Columbus Varnish Co.

Permatex—See Benoit, Constant A.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Quickwork—See Standard Varnish Works.

Red Cross—See National Rubber & Specialties Co.

Red Line, Inc., Grand Rapids, Mich. "Spotnamel." (See page 667.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Rogers—See Detroit White Lead Works.

Royal Varnish Co., Lake Shore Ave., Toledo, O.

Silkup—See Arnold, N. B.

Spotnamel—See Red Line, Inc.

Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."

Stay-Bright Lacquer Co., 58 W. Washington St., Chicago, Ill.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Behrok," "Bay State."

Whiz—See Hollingshead Co.

ENAMELS, ENGINE—See Paints, Exhaust Pipe

ENAMELS, LAMP—See Enamels, Brass

ENAMELS, RADIATOR—See Enamels, Brass

ENAMELS, RIM—See Paints, Rim; also Paints, Aluminum and Bronze

ENDLESS BELTS—See Belts, Spiral Wire; also Belts, Endless Fabric

ENDLESS BELTS FOR FORDS—See Belts, Fan

ENDS, Airplane Strut

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

ENDS, YOKE—See Yokes, Special

ENGINE BOLTS FOR FORDS—See Bolts, Special

ENGINE BUSHINGS FOR FORDS—See Bushings, Bronze

ENGINE CLEANERS—See Cleaners, Engine; for Steam Engine Cleaners—See Boilers, Steam Engine Cleaning

ENGINE DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

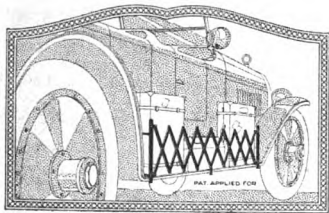
ENGINE DRIVEN BILGE PUMPS—See Pumps, Motor Boat Engine Driven Bilge

Everything is listed under the NOUN or principal word

STANDLEY AUTOMOBILE UTILITIES

(TRADE MARK)

Each Standley product meets a real need—as is shown by their wide demand. These utilities have set a standard of workmanship, appearance and quality materials that cannot be excelled.



Standley ADJUSTABLE Luggage Carrier

Carries luggage on the running board, out of passengers' way. **Adjustable from 10 to 65 inches.** Fits any car. Quickly attached by malleable clamps and lock nuts. No holes to bore. No marks left when detached. Folds up compactly when not in use. Steel construction. Baked black enamel. Weight 15 pounds. Price \$6. West of Rockies \$6.50.



STANDLEY RIM TOOL

For contracting and expanding the rim. The simplest Rim Tool on the market. Can be operated easily with the hand, enabling one to remove the tire in a moment.

Removes 32, 34 and 36 in. tires. Upper cut shows it knocked down for tool kit. Price, \$1.50 (West of Rockies, \$1.60). Finished in baked black enamel. Weight, 2 lbs.



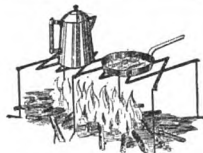
STANDLEY SAFETY TREAD

Prevents slipping on the running board, provides a place to scrape mud and snow from shoes.

Attached with clamps, no tools necessary. Can be thoroughly cleaned without removing.

Adds to the appearance of the car. Constructed of steel. Baked black enamel.

Price, \$1.50 (West of Rockies, \$1.60). Weight, 2½ lbs.

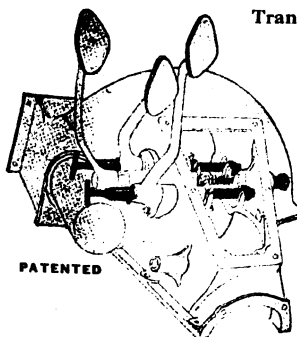


STANDLEY CAMP GRID

A necessity to tourists, campers, fishers, hunters, outing parties, scouting parties, picnics.

Adjustable to any length. Folds in small, compact package 1 by 6 by 10 inches.

Price, \$1.50 (West of Rockies, \$1.60). Weight, 3½ lbs.



PATENTED

STANDLEY Transmission Band Adjuster For Ford Car

Adjusts brakes in a minute against old way requiring about half hour. Brake tightening with the "Standley" is a quick, simple job. Any Ford owner can do it.

Does away with loose brakes and accidents from this cause. Installed without altering the car in any way.

Made of cold rolled steel, machined to fit perfectly. The pins are put in under high pressure and cannot drop out. Specially designed lock washers made from best material. A necessity for every Ford, sooner or later.

Price, \$3 per pair, F. O. B. Boone.



Standley "Kiddle Carrier"

Relieves the mother while touring. A safe comfortable place for baby, within easy reach. Hangs from top supports. Also used as a tonneau luggage carrier. Adjustable to any width of car and can be placed at any desired height and locked in position. Collapses into small space. Made of steel, finished in baked black enamel. Four black web straps provided.

Price, \$10. West of Rockies, \$11.

STANDLEY SKID CHAIN CO., Inc., Boone, Iowa, U. S. A.

Please mention The Automobile Trade Directory

ENGINE DRIVEN TIRE PUMPS—See
Pumps, Engine Driven Tire

ENGINE GOVERNORS—See Governors,
Engine

ENGINE HOODS—See Hoods, Engine

ENGINE INDICATORS—See Indicators,
Gasoline Engine

ENGINE LATHES—See Lathes, Engine

ENGINE OPERATED HORNS—See Horns,
Engine Operated

ENGINE PRIMERS—See Primers, Gasoline
Engines

ENGINE RACKS—See Stands, Engine Re-
pair

ENGINE REPAIR BRACKETS FOR FORDS
See Brackets or Supports, Engine Repair

ENGINE REPAIR SUPPORTS FOR FORDS
—See Brackets or Supports, Engine Re-
pair

ENGINE SPEED INDICATORS—See Indi-
cators, Tractor Engine Speed

ENGINE SUPPORTS FOR FORDS—See
Supports, Engine

ENGINE TESTING DYNAMOMETERS—
See Dynamometers, Testing

ENGINE TESTING INSTRUMENTS—See
Instruments, Engine Testing

ENGINE VALVES—See Valves, Engine
Poppet

ENGINES, Aircraft Gasoline

Brennen Motor Mfg. Co., 103 Grape St., Syra-
cuse, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City,
N. Y.

Curtiss Engineering Corp., Garden City, N. Y.
Detroit Manufacturers Syndicate, Majestic
Bldg., Detroit, Mich. "Viking."

Duesenberg Motor Corp., 120 Broadway, New
York, N. Y.

Hall-Scott Motor Car Co., 612 Market St., San
Francisco, Cal.

Harriman Motor Co., South Glastonbury,
Conn.

Hispano—See Wright Aeronautical Corp.

Kessler Motor Co., 275 Terminal Ave., De-
troit, Mich.

Lawrence Aero Engine Corp., 644 W. 44th St.,
New York, N. Y.

Miller Engineering & Foundry Works, 2652
Long Beach Ave., Los Angeles, Cal.

Murray-Willat Motor & Aeroplane Corp., 17
W. 44th St., New York, N. Y.

Mystic Motor Co., 1457 Broadway, New
York, N. Y. (See page 793.)

Rausie—See Steel Products Engineering Co.

Steel Products Engineering Co., Springfield, O.
"Rausie."

Sturtevant Aeroplane Co., William St. (Ja-
maica Plain), Boston, Mass.

Sturtevant Co., B. F., Hyde Park, Boston,
Mass.

Thomas-Morse Aircraft Co., Ithaca, N. Y.

Viking—See Detroit Manufacturers Syndicate.

Wisconsin Motor Mfg. Co., Milwaukee,
Wis. (See page 383.)

Wright Aeronautical Corp., Paterson, N. J.
"Hispano."

ENGINES, Automobile Gasoline

Automatic Machine Co., 113 E. Washington
Ave., Bridgeport, Conn.

Avery Co. Motor Works, 57th Ave. & Mitchell
St. (W. Allis), Milwaukee, Wis.

Balanced Valve Motor Co., 284 E. Water St.,
Milwaukee, Wis.

Beaver Mfg. Co., First St. & Oklahoma Ave.,
Milwaukee, Wis.

Brennan Motor Mfg. Co., 103 Grape St., Syra-
cuse, N. Y.

Buda Co., Harvey, Ill. (See page 387.)

Buffalo Gasoline Motor Co., 1280-90 Niagara
St., Buffalo, N. Y.

Bull Dog—See Weldely Motors Co.

C. A. S. Engineering Co., 790 Woodward Ave.,
Detroit, Mich. (Sole Distributors for H. J.
Walker Co., Cleveland, O.)

Cameron Motors Corp., 2 Columbus Circle,
New York, N. Y.

Central Service Corp., 1607 Merchants
Bank Bldg., Indianapolis, Ind. (Sales
Representative.) (See page 335.)

Chevrolet Motor Co. (Motor & Axle Div.)
W. Kearsley St., Flint, Mich.

Climax Engineering Co., 1800 S. Fourth St.,
Clinton, Ia.

Colonial Motors Co., 1056 W. Warren Ave.,
Detroit, Mich.

Continental Motors Corp., Detroit, Mich.
"Red-Seal." (See page 501.)

Duesenberg—See Rochester Motors Co.

Erd Motor Co., 200-04 Mackinaw St., Saginaw,
Mich.

Falls Motors Corp., 200 Mack Ave., Sheboygan
Falls, Wis.

Gould Motor & Mfg. Co., Marion, Ind.

Gray Motor Co., Detroit, Mich.
(See page 387.)

Grohman Motor Mfg. Co., East Greenville, Pa.

Hercules Motor Mfg. Co., Canton, O.

Herschell-Spillman Motor Co., North Tona-
wanda, N. Y.

Hess Motor Co., 1430 Sherman Ave., Detroit,
Mich.

Highway Engine Co., Defiance, O.

Hinkley Motors Corp., 918-32 W. Fort St.,
Detroit, Mich. (See page 389.)

J. V. B. Engine Co., 5912 Central Ave., Clevel-
and, O.

Johnson Motor Co., 45 Fort St. E., Detroit,
Mich.

Kessler Motor Co., 275 Terminal Ave., De-
troit, Mich.

Keuka Industries, Inc., Hammondsport, N. Y.

Knox Motors Associates, Springfield, Mass.

Krider, A. S., Montpelier, O.

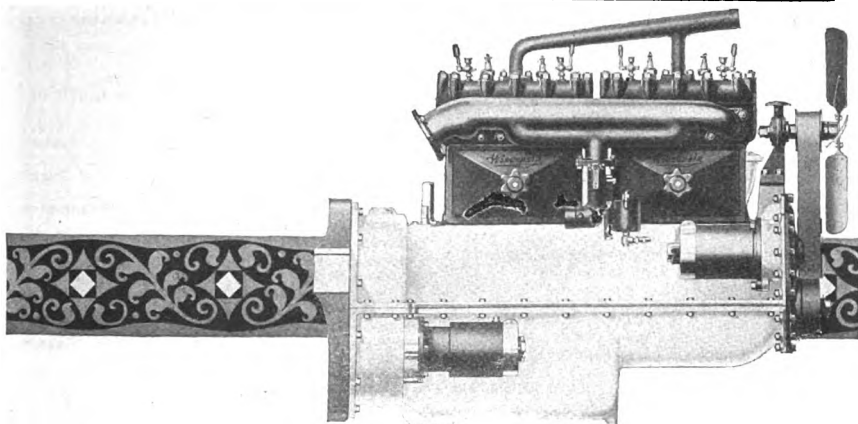
L. W. H. Motor Co., Shelton, Conn.

Lawrence-Lewis Aeroplane Co., Peoples Gas
Bldg., Chicago, Ill.

Le Roi Co., Mitchell St. & 60th Ave., Mil-
waukee, Wis. (See page 385.)

Lewis Motor Mfg. Co., Security Bldg., For-
toria, O.

Everything is listed under the NOUN or principal word



Wisconsin

CONSISTENT

Motors for Truck, Tractor, Marine, Motor Car and Industrial Equipment

Details of construction strength, fuel economy, power, accessibility, and freedom from all troubles—the minor ailments as well as the more serious ones—should guide the vehicle manufacturer who is building with quality as an ideal.

SIZES AND TYPES

Model	Bore & Stroke	No. Cyls.	Cyls. Cast	S. A. E. Rating
C. A. U.	3 3/4 x 5.	4.	En-bloc.	22.5
E. A. U.	4 x 5.	4.	En-bloc.	25.6
T. A. U.	4 x 6.	4.	En-bloc.	25.6
U. A. U.	4 1/4 x 6.	4.	En-bloc.	28.9
V. A. U.	4 1/2 x 6.	4.	En-bloc.	32.4
R. A. U.	4 3/4 x 6.	4.	In pairs.	36.1
R. B. U.	5 x 6.	4.	In pairs.	40.
M.	5 3/4 x 7.	4.	In pairs.	52.9
P.	5 3/4 x 7.	6.	In pairs.	79.35

SPECIAL FEATURES OF CONSTRUCTION

Aluminum Crankcase—three point suspension—all-steel supports—chrome nickel crankshaft—force feed lubrication—all bearings extra large, bronze, lined with babbitt metal—tungsten steel exhaust valves—wide faced gears—rigid fan belt and drive—special provision to prevent oil leaks—combination inlet and exhaust manifolds—valve stems and tappets automatically lubricated from crank chamber—oil tight valve cover plates.

Write for detailed specifications.

A WISCONSIN MOTOR IS A CERTIFICATE OF QUALITY TO THE VEHICLE IT POWERS.

WISCONSIN MOTOR MANUFACTURING CO.

Milwaukee, Wisconsin

DISTRIBUTORS:

T. M. FENNER,
21 Park Row, New York City
WISCONSIN MOTOR PARTS CO.
2351 Cottage Grove Ave.
Chicago, Ill.

CHANDLER-HUDSON CO.
Seattle, Washington
EARL P. COOPER CO.
1310 S. Los Angeles St.
Los Angeles, Cal.

Please mention The Automobile Trade Directory

ENGINES, Automobile Gasoline (Continued)

Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
Lyeomg Motors Corp., Williamsport, Pa. (See page 385.)
Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 387.)
 Midwest Engine Co., 1900 Martindale Ave., Indianapolis, Ind.
Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal.
 Minerva Engine Co., Cleveland, O.
Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."
Model—See Pittsburgh Model Engine Co.
Myrtle Motor Co., 1457 Broadway, New York, N. Y. (See page 703.)
Niagara Motors Corp., Dunkirk, N. Y. (See page 693.)
 Northway Motor & Mfg. Co., 4584 Maybury Ave., Detroit, Mich.
 Oberting Motors Co., 5320 St. Clair St., Cleveland, O.
Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa. "Model."
 Power Vosburg Co., 445 W. Larned St., Detroit, Mich.
 R. & V. Motor Co., East Moline, Ill.
Red Seal—See Continental Motors Corp.
Rochester Motors Co., 624 Lexington Ave., Rochester, N. Y. "Duesenberg."
 Rutenber Motor Co., Factory Ave., Marion, Ind.
Sphinx Motor Co., 323 N. Waller St., Chicago, Ill.
Supreme Motors Corp., Warren, O. (See page 512.)
Teator-Hartley Motor Co., Washington & Factory Sts., Hagerstown, Ind.
Turmo—See Turner & Moore Mfg. Co.
 Turner & Moore Mfg. Co., Merritt Ave., Detroit, Mich. "Turmo."
Twin City—See Minneapolis Steel & Machinery Co.
 Van Blerck Motor Co., E. First St., Monroe, Mich.
Walker Co.—See C. A. S. Sales Co.
 Waukesha Motor Co., Waukesha, Wis.
Weldely Motors Co., Indianapolis, Ind. "Bull Dog."
 (See Inside Back Cover.)
 Wellman-Seaver-Morgan Co., 7000 Central Ave., Cleveland, O.
 Wilson Foundry & Machine Co., Pontiac, Mich.
 Wisconsin Motor Mfg. Co., Milwaukee, Wis. (See page 383.)

ENGINES, Automobile Steam

Stanley Motor Carriage Co., Newton, Mass.

ENGINES, GASOLINE—See Engines, Aircraft Gasoline; also Engines, Automobile Gasoline; also Engines, Motor Boat Gasoline; also Engines, Motor Boat Outboard; also Engines, Motorcycle Gasoline; also Engines, Tractor Gasoline

ENGINES, KEROSENE — See Engines, Motor Boat Kerosene; also Engine, Tractor Kerosene

ENGINES, Motor Boat Gasoline

Acme Engine Co., 163 Main St., San Francisco, Cal.
Aldrive—See Kemp Machine Works.
 Anderson Engine Co., 4036 N. Rockwell St., Chicago, Ill.
 Arrow Motor & Machine Co., 729-39 Frey-linghuysen Ave., Newark, N. J. "Waterman."
Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn. "Capitol."
Automatic Machine Co., 118 E. Washington St., Bridgeport, Conn. "Snapper."
 Barker Factory, Norwalk, Conn.
 Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.
Bridgeport Motor Co., 105 Kosuth St., Bridgeport, Conn.
Bud-E—See Johnson Machine Co.
Buffalo Gasolene Motor Co., 1230-90 Niagara St., Buffalo, N. Y.
C-O—See Fairbanks-Morse & Co.
 Cady Co., C. N., Canastota, N. Y.
 Cailla Perfection Motor Co., 6210 Second Ave., Detroit, Mich.
Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
Capitol—See Auto Engine Works.
 Chesapeake Engine Co., Oxford, Md.
Clay Engine Mfg. Co., 864 E. 73d St., Cleveland, O. "Honest Clay."
 Clift Motor Co., Bellingham, Wash.
 Clifton Motor Works, 229-31 E. Clifton Ave., Cincinnati, O.
Consolidated Shipbuilding Corp. (Morris Heights), New York, N. Y.
 Cummins Engine Co., Columbus, Ind.
 Curtiss Aeroplane & Motor Corp., Garden City, N. Y.
Driggs Ordnance Co., 120 Broadway, New York, N. Y.
 Du Pont Motors, Commerce St., Wilmington, Del.
Duesenberg Motor Corp., 120 Broadway, New York, N. Y.
Dunn Motor Works, Ogdensburg, N. Y.
 Erd Motor Co., 300-04 Mackinaw St., Saginaw, Mich.
Evansville Gas Engine Works, 1230 Riverside Ave., Evansville, Ind.
 Evinrude Motor Co., 346 Evinrude Bldg., Milwaukee, Wis.
 Fairbanks-Morse & Co., 900 S. Wabash Ave., Chicago, Ill. "C-O."
Fay & Bowen Engine Co., Lake St., Geneva, N. Y.
 Fisherman—See Loane Engineering Co.
Fordmarine—See New Jersey Motor Sales Co.
Fraser-Adams—See Fraser Bros. Co.
Fraser Bros. Co., 1 Grange Ave., Adams, N. Y. "Fraser-Adams."
Frisbie Motor Co., 40 College St., Middletown, Conn.
Frisco Standard—See Standard Gas Engine Co.
 Fulton Mfg. Co., Erie, Pa.
 Gaeth Motor Co., 2101-17 Abbey Ave., Cleveland, O.
Grand Rapids Gas Engine Co., 562 Front Ave., N. W., Grand Rapids, Mich. "Monarch."
Gray Motor Co., Detroit, Mich. (See page 387.)
 Gray & Prior Machine Co., 32 Suffield St., Hartford, Conn.
Hall-Scott Motor Car Co., 612 Market St., San Francisco, Cal.
 Hess Motor Co., 1430 Sherman Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word

The unvarying standard of every Lycoming Motor, its reliability under conditions of unusual service, and the certainty of scheduled deliveries are the manufacturer's assurance of establishing and maintaining the favorable attitude of his customers and prospects.

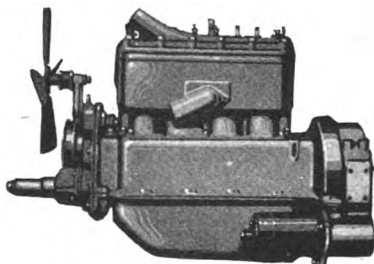
Lycoming Motors Corporation

WILLIAMSPORT, PA.



The Lycoming Motor

—an unusual four



LEROI the Little Giant of a Motor

If we could bring you through the plant where Le Roi Motors are made, you would see the diligent care and ingenious craftsmanship that is built into every motor.

Every little detail of balance and finish on a Le Roi is given the care typical of men who love the motors they make.

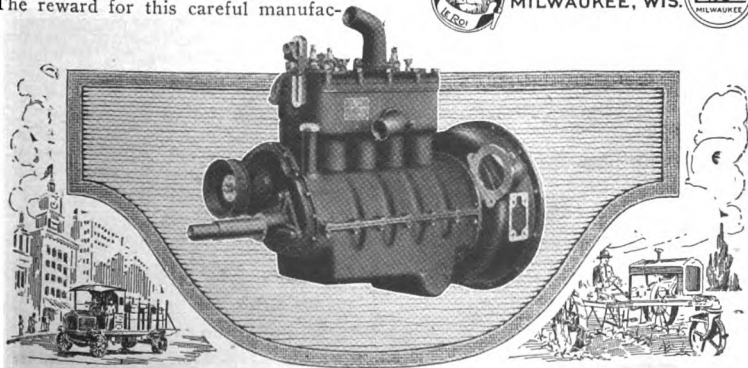
The reward for this careful manufac-

ture is reaped in every field where Le Roi Motors are furnishing the pulse of power in machines of many descriptions.

LEROI COMPANY



MITCHELL ST AND 60TH AVE
MILWAUKEE, WIS.



Please mention The Automobile Trade Directory

ENGINES, Motor Boat Gasoline (Continued)

Hettinger Engine Co., Grove & Henry Sts., Bridgeport, N. J.
 Honest Clay—See Clay Engine Mfg. Co.
 Johnson Machine Co., Carlisle, 53 Main St., Manchester, Conn. "Bud-E."
 John R. Gardner—See Lakeland Motor Works.
 Jones Co., S. M., Toledo, O. "Ralaco."
 Kahlenberg Bros. Co., 1705 12th St., Two Rivers, Wis.
 Kemp Machine Works, 1215 S. Franklin St., Muncie, Ind. "Aldrive."
 Kermath Mfg. Co., 5880 Commonwealth Ave., Detroit, Mich.
 Keuka Industries, Inc., Hammondsport, N. Y.
 King Bros., 439 E. Water St., Syracuse, N. Y.
 Knock-Down Motors, 76 St. Nicholas Pl., New York, N. Y. "Shipmate."
 Knox Motors Associates, Springfield, Mass.
 Krider, A. S., Montpelier, O.
 Lakeland Motors Works, Lakeland, Mich. "John R. Gardner."
 Lathrop Co., J. W., Mystic, Conn.
 Lewis Motor Mfg. Co., Security Bldg., Fosteria, O.
 Loane Engineering Co., 306 Hanover St., Baltimore, Md. "Fisherman."
 Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.
 M. & J. Specialty Co., 252 S. Parke St., Pontiac, Mich.
 Mianus Motor Works, McGee Ave., Stamford, Conn.
 Michigan Marine Motor Corp., 7237 E. Jefferson Ave., Detroit, Mich.
 Miller Engine Co., 2329-31 N. Talman Ave., Chicago, Ill.
 Missouri Engine Co., 2806 N. 11th St., St. Louis, Mo.
 Monarch—See Grand Rapids Gas Engine Co.
 Morton Motor Co., 46 Lafayette Ave., E., Detroit, Mich.
 Murray & Tregurtha Co., 340 W. First St., Boston, Mass.
 Mystic Motor Co., 1457 Broadway, New York, N. Y. (See page 763.)
 New Jersey Motor Sales Co., Keyport, N. J. "Fordmarine."
 New York Yacht, Launch & Engine Co., Morris Heights, N. Y. "20th Century."
 Niagara Motors Corp., Dunkirk, N. Y. (See page 693.)
 Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.
 Olmstead & Sons, A. E., 21 Maple Ave., Pulaski, N. Y. "Ontario."
 Ontario—See Olmstead & Sons.
 Palmer Bros. Engine Co., Cos Cob, Conn.
 Peerless Marine Motor Co., 2150 Niagara St., Buffalo, N. Y.
 Pierce-Budd Co., Bay City, Mich.
 Pittsburgh Filter & Engineering Co., Pittsburgh, Pa.
 Ralaco—See Jones Co.
 Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."
 Regal Gasoline Engine Co., 59 W. Pearl St., Coldwater, Mich.
 Roberts Motors, Sandusky, O.
 Root & Van Dervoort Engineering Co., Sixth St. & 18th Ave., East Moline, Ill.
 S. R. Mfg. Co., Schenectady, N. Y.
 Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."
 Seattle Standard Engine Mfg. Co., Seattle, Wash.
 Shipmate—See Knock-Down Motors.

Sinclair Motors, New Orleans, La. "Ultimate."
 Snapper—See Automatic Machine Co.
 Speedway—See Consolidated Shipbuilding Corp.
 Standard Gas Engine Co., Dennison & King Sts., Oakland, Cal. "Frisco Standard."
 Standard Motor Construction Co., 125 Pine St., Jersey City, N. J.
 Standard Oil Engine Co., Woolworth Bldg., New York, N. Y.
 Stanley Co., 48 Loring Ave., Salem, Mass.
 Sterling Engine Co., 1281-74 Niagara St., Buffalo, N. Y.
 Sturtevant Co., B. F., Hyde Park, Boston, Mass.
 Thorobred—See Red Wing Motor Co.
 20th Century—See N. Y. Yacht, Launch & Engine Co.
 Ultimate—See Sinclair Motors.
 Universal Motor Co., 29 Ceape St., Oshkosh, Wis.
 Universal Products Co., Oshkosh, Wis. "Doman."
 Van Blerck Motor Co., E. First St., Monroe, Mich.
 Vulcan Engine Works, 1827 Bainbridge St., Philadelphia, Pa.
 Waterman—See Arrow Motor & Machine Co.
 Wisconsin Motor Mfg. Co., Milwaukee, Wis. (See page 383.)
 Wolverine Motor Works, 35 Union Ave., Bridgeport, Conn.

ENGINES, Motor Boat Kerosene, Crude Oil, etc.

Acme Engine Co., 163 Main St., San Francisco, Cal.
 Anderson Engine Co., 4636 N. Rockwell St., Chicago, Ill.
 Baltimore Oil Engine Co., Baltimore, Md.
 Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.
 Camden Anchor-Rockland Machine Co., Camden, Me.
 Carl Engine & Machine Works, 103 N. Second St., Philadelphia, Pa.
 Commonwealth Motors Co., 236 W. Madison St., Chicago, Ill. "Quayle."
 Clay Engine Mfg. Co., 864 E. 72d St., Cleveland, O. "Honest Clay."
 Craig Engine & Machine Works, James, 807 Garfield Blvd., Jersey City, N. J.
 Dodge Sales & Engineering Co., Mishawaka, Ind.
 Dunn Motor Works, Ogdensburg, N. Y.
 Grand Rapids Gas Engine Co., 562 Front Ave., N. W., Grand Rapids, Mich. "Monarch."
 Gray & Prior Machine Co., 32 Suffolk St., Hartford, Conn.
 Hatch Engine Co., 2-4 Stone St., New York, N. Y.
 Harris Engine Co., Wilmington, Del.
 Hitchcock—See Standard Oil Engine Co.
 Honest Clay—See Clay Engine Mfg. Co.
 Jacobson Gas Engine Co., Albany, N. Y.
 Kahlenberg Bros. Co., 1705 12th St., Two Rivers, Wis.
 Lathrop Co., J. W., Mystic, Conn.
 Lasker Gas Engine Co., 190 Main St., Buffalo, N. Y.
 Melts Corp., August, 128 Mott St., New York, N. Y.
 Mianus Motor Works, McGee Ave., Stamford, Conn.
 Miller Engine Co., 2329-31 N. Talman Ave., Chicago, Ill.
 Missouri Engine Co., 2806 N. 11th St., St. Louis, Mo.

Everything is listed under the NOUN or principal word

J O B B E R S

and

D I S T R I B U T O R S

in

AUTO ACCESSORIES

TIRES and TUBES

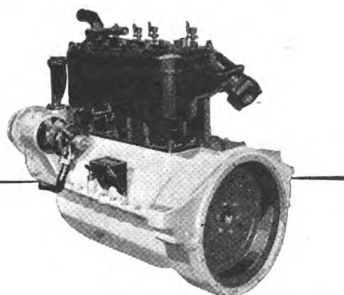
TOOLS and SHOP SUPPLIES

Service and Quality

**National Auto Supply
Company**

1601-1603 So. Michigan Ave.

CHICAGO



"A Buda engine for every automotive need"

MU—	3¼ in. x 5¼ in.	4 cyl.
DTU—	3¼ in. x 5¼ in.	4 cyl.
CTU—	3¼ in. x 5¼ in.	4 cyl.
FTU—	4 in. x 5½ in.	4 cyl.
ETU—	4¼ in. x 5½ in.	4 cyl.
XTU—	4¼ in. x 6 in.	4 cyl.
YTU—	4¼ in. x 6 in.	4 cyl.
ATU—	4¼ in. x 6½ in.	4 cyl.
BTU—	5 in. x 6½ in.	4 cyl.

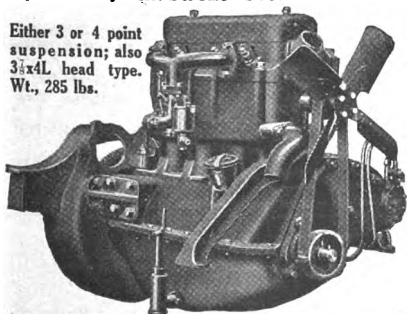
THE BUDA COMPANY

HARVEY CHICAGO ILL.
ESTABLISHED 1881



3¼-in. Bore, 5-in. Stroke—Overhead Valves

Either 3 or 4 point
suspension; also
3½x4L head type.
Wt., 285 lbs.



THOROUGHLY standardized; no untried features;
wonderful staying power. Same model used by
Government in most exacting war service.

Many thousands now in use all over the world.
Just as dependable for power work as for motor
vehicles; three or four point suspension.

Let us send full information

THE MATTHEWS ENGINEERING CO.
460 Monroe Street Sandusky, Ohio

MATTHEWS
Auto & Truck
MOTORS

New **GRAY**



**3½x5 — Four Cylinder Over-
head Valve, up-to-date. For
Light Trucks, Cultivators, Light
Tractors, Pleasure Cars.**

Hot-spot manifold—double hot-spot
cylinder head. Uses low grade fuel
efficiently.

Very powerful and flexible motor.
New Pleasure car model for 1920.
Samples Ready.

GRAY MOTOR COMPANY
DETROIT, U. S. A.

Please mention The Automobile Trade Directory

ENGINES, Motor Boat Kerosene, Crude Oil, etc. (Continued)

Monarch—See Grand Rapids Gas Engine Co.
 Nilson-Miller Co., 1800-06 Hudson St., Hoboken, N. J.
 Olin Gas Engine Co., 19-16 Lock St., Buffalo, N. Y.
 Quayle—See Commonwealth Motors Co.
 Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."
 Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."
 Seattle Standard Engine Mfg. Co., Seattle, Wash.
 Standard Oil Engine Co., 120 Seaview Ave., Bridgeport, Conn. "Hitchcock."
 Thorobred—See Red Wing Motor Co.
 Venn-Severin Machine Co., 1817-25 W. North Ave., Chicago, Ill.
 Vulcan Engine Works, 1827 Bainbridge St., Philadelphia, Pa.
 Wolverine Motor Works, 25 Union Ave., Bridgeport, Conn.
 Wright Machine Co., 321 E. Second St., Owensboro, Ky.

ENGINES, Motor Boat Outboard or Detachable

Aerotruster Engine Co., 50 Madison St., La Porte, Ind.
 Allen, Clarence J., 645 S. Pierce St., Milwaukee, Wis. "Amphion."
 Amphion—See Allen, Clarence J.
 Caille Perfection Motor Co., 6210 Second Ave., Detroit, Mich.
 Evinrude Motor Co., 346 Evinrude Bldg., Milwaukee, Wis.
 Geerholt Gas Motor Co., Marine City, Mich.
 Koban Mfg. Co., 241 S. Water St., Milwaukee, Wis.
 Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.

ENGINES, Motorcycle Gasoline

De Luxe—See Spacke Machine & Tool Co.
 North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Phantom."
 Phantom—See North Chicago Machine Co.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind. "De Luxe."

ENGINES, Automobile Steam

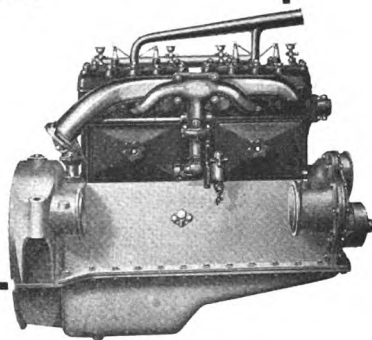
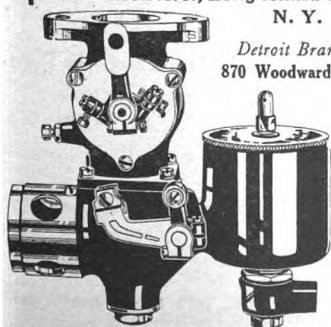
Stanley Motor Carriage Co., 44 Hunt St., Newton, Mass.

ENGINES, Tractor Gasoline

Automatic Machine Co., 118 E. Washington Ave., Bridgeport, Conn.
 Beaver Mfg. Co., First St. & Oklahoma Ave., Milwaukee, Wis.
 Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.
 Bridgeport Motor Co., 105 Kosuth St., Bridgeport, Conn.
 Buda Co., Harvey, Ill. (See page 387.)
 Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.
 Bull Dog—See Weldely Motors Co.
 Central Service Corp., 1907 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)

Chief Motor Co., Port Huron, Mich.
 Continental Motors Corp., Detroit, Mich. "Red Seal." (See page 501.)
 Duesenberg Motor Corp., 120 Broadway, New York, N. Y.
 Erd Motor Co., 800-04 Mackinaw St., Saginaw, Mich.
 Gray Motor Co., Detroit, Mich. (See page 387.)
 Grohman Motor Mfg. Co., East Greenville, Pa.
 Hercules Motor Mfg. Co., Canton, O.
 Herschell-Spillman Motor Co., North Tonawanda, N. Y.
 Highway Engine Co., Defiance, O.
 Hinkley Motors Corp., Detroit, Mich. (See page 389.)
 Johnson Motor Co., 45 Fort St. E., Detroit, Mich.
 Knox Motors Associates, Springfield, Mass.
 L. M. F.—See Light Mfg. & Foundry Co.
 Le Roi Co., Mitchell St. & 60th Ave., Milwaukee, Wis. (See page 385.)
 Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa. "L. M. F."
 Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 387.)
 Midwest Engine Co., 1900 Martindale Ave., Indianapolis, Ind.
 Minerva Engine Co., Cleveland, O.
 Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."
 Mystic Motor Co., 1457 Broadway, New York, N. Y. (See page 793.)
 Niagara Motors Corp., Dunkirk, N. Y. (See page 693.)
 Northway Motor & Mfg. Co., 4584 Maybury Ave., Detroit, Mich.
 Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.
 R. & V. Motor Co., East Moline, Ill.
 Red Seal—See Continental Motors Corp.
 Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."
 Reliable Tractor & Engine Co., Portsmouth, O.
 Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y.
 Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."
 Sphinx Motor Co., 323 N. Waller St., Chicago, Ill.
 Stearns Motor Mfg. Co., Ludington, Mich.
 Sterling Engine Co., 1252-72 Niagara St., Buffalo, N. Y.
 Supreme Motors Corp., Warren, O. (See page 512.)
 Thorobred—See Red Wing Motor Co.
 Thorobred—See Scripps Motor Co.
 Toro Mfg. Co., 3062 Snelling Ave., Minneapolis, Minn.
 Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.
 Turmo—See Turner & Moore.
 Turner & Moore Mfg. Co., 4660 Merritt Ave., Detroit, Mich. "Turmo."
 Twin City—See Minneapolis Steel & Machinery Co.
 Universal Products Co., Oshkosh, Wis. "Doman."
 Walker Co., H. J., 181st St. & Taft Ave., Cleveland, O.
 Waukesha Motor Co., Waukesha, Wis.
 Weldely Motors Co., Indianapolis, Ind. "Bull Dog." (See inside Back Cover.)
 Wellman-Seaver-Morgan Co., 7000 Central Ave., Cleveland, O.
 Willson Co., H. J., Cleveland, O.

Everything is listed under the NOUN or principal word

HINKLEY**HEAVY DUTY AUTOMOTIVE****ENGINES****HINKLEY MOTORS CORPORATION**
DETROIT**For Trucks
of One to
Six Tons Capacity****CLAUDEL****The Famous Carburetor
for Maximum Results**Winner of the majority of racing events
in Europe, on the road and in the air.*Now Manufactured for the
American Industry by***CLAUDEL CARBURETOR COMPANY**
192 Jackson Ave., Long Island City,
N. Y.*Detroit Branch*
870 Woodward Ave.**White Metal
Die Castings**Why do machining on your cast-
ings? Have them die cast to
finished dimensions, including
threads and inserts.**We Make for Ford Cars**Timers
Radiator Caps
Filler Plugs
Thrust Washers, Etc.**Vulcan Die Casting Corporation**
1126-36 W. Belden Ave., Syracuse, N. Y.**Please mention The Automobile Trade Directory**

ENGINES, Tractor Gasoline (Continued)

Wisconsin Motor Mfg. Co., Milwaukee, Wis. (See page 383.)

ENGINES, Tractor Kerosene

Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.

Bull Dog—See Weldely Motors Co.

Climax Engineering Co., 1800 S. Fourth St., Clinton, Ia.

Gray Motor Co., Detroit, Mich. (See page 387.)

Hatch Engine Co., 1-4 Stone St., New York, N. Y.

Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."

Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."

Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."

Thorobred—See Red Wing Motor Co.

Thorobred—See Scripps Motor Co.

Twin City—See Minneapolis Steel & Machinery Co.

Weldely Motors Co., Indianapolis, Ind. "Bull Dog." (See Inside Back Cover.)

ENVELOPES, TOP—See Covers, Top**EQUALIZERS, Brake, for Fords**

(Devices to ensure the equal application of the brakes on both rear wheels to prevent skidding)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 645.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See page 125, 143, 307 and 983.)

EQUALIZERS, Trailer Brake

Raybestos Co., Bridgeport, Conn. (See page 577.)

EQUALIZING GEARS—See Gears, Differential**ESCUTCHEON PINS—See Pins, Escutcheon****ETHER, Denatured**

(For priming engines in cold weather to facilitate starting)

Albany Chemical Co., 2-24 Broadway, Albany, N. Y.

EXHAUST BOXES, MOTOR BOAT, Underwater—See Boxes, Motor Boat Underwater Exhaust**EXHAUST DEFLECTORS FOR FORDS—See Deflectors, Exhaust****EXHAUST HORNS—See Horns, Exhaust****EXHAUST MANIFOLDS—See Manifolds****EXHAUST MUFFLERS—See Mufflers, Exhaust****EXHAUST PIPE PAINTS—See Paints, Exhaust Pipe****EXHAUST SILENCERS—See Mufflers, Exhaust****EXHAUST WHISTLES—See Horns, Exhaust****EXPANDERS, Boiler Tube**

Ajax Mfg. Co., 848 Jackson St., Pittsburg (N. S.), Pa.

Martens Co., E. A., Lafayette, Ind.

EXPANDERS, PISTON RING—See Rings, Piston Ring Expanding**EXPANDERS, RIM—See Tools, Demountable Rim Contracting****EXPANDING BRAKES—See Brakes, Expanding****EXPANDING MANDRELS—See Mandrels, Expanding****EXPLOSION WHISTLES—See Horns, Exhaust****EXTENSION REELS—See Reels, Automobile Extension Lamp****EXTENSION TOOL HANDLES—See Handles, Extension Tool****EXTENSION UNITS FOR FORDS—See Converters****EXTENSIONS, Door Latch for Fords**

Finch—See Wayland Specialty Mfg. Co.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Finch."

EXTENSIONS, Dummy Frame, Fords

(For attaching to front of car to give appearance of springs)

Corcoran Mfg. Co., 4624 Spring Grove St., Cincinnati, O. "Peerless."

Peerless—See Corcoran Mfg. Co.

Everything is listed under the NOUN or principal word

Self Lubricated Graphite Bronze

.....

Bushings
Bearings
Washers

Clutch Shaft Pilot Bearings

*"Our bushings are used on
70—makes of passenger cars
50—makes of trucks, also by
25—parts manufacturers in-
cluding the leaders in their
respective field."*

The Cleveland Graphite-Bronze Co.
Cleveland

EXTENSIONS, Gear Shift Lever

(To enable driver to shift gears without unnecessary reaching)

Hite Mfg. Co., 823-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

Hughes-Mellins—See M. & H. Novelty Co.

Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill.
(See page 505.)

M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins."
(See page 901.)

S-O-S—See Hite Mfg. Co.

EXTENSIONS, Gear Shift Lever for Fords

(To enable driver to shift gears without unnecessary reaching)

Extendor—See S. & P. Mfg. Co.

Hughes-Mellins—See M. & H. Novelty Co.

M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins."
(See page 901.)

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y. "Extendor."

EXTENSIONS, Pedal

(For clutch and brake pedals so that adjustments in length may be made)

Fit-All Adjustable Pedal Co., 18 Charlotte St., Tiffin, O.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."

Rico—See Rich Mfg. Co.

EXTENSIONS, Pedal, for Fords

Hill Mfg. Co., H. H., Upper Montclair, N. J.

EXTENSIONS, SPOT LIGHT HANDLE—See Handles, Extension Spot Light**EXTENSIONS, TIMER WIRE—See Terminals, Timer for Fords****EXTINGUISHERS, Automobile Fire**

(For Car Equipment)

Auto-Fyr—See U. S. Fire Extinguisher Co.

Boyce-Veeder Corp., 68 Hunters Point Ave., Long Island City, N. Y.

Buffalo Chemical Fire Extinguisher Co., 61-69 Carroll St., Buffalo, N. Y. "Niagara."

Feumort Mfg. Co., 160 Fifth Ave., New York, N. Y.

Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.

Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y. "Rapidac."

Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.

Fyr-Fyter Co., 221 Crane St., Dayton, O.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.

New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.

Niagara—See Buffalo Chemical Fire Extinguisher Co.

Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.

Rapidac—See Fire Fighting Devices Co.

U. S. Fire Extinguisher Co., Syracuse, N. Y. "Auto-Fyr." (See page 393.)

EXTINGUISHERS, Garage Fire

(For Garage and Shop Equipment)

Acme—See Rex-Harris Fire Appliance Co. of N. Y.

Allen Corp., 546 Greenwich St., New York, N. Y. "Pronto."

American-La France Fire Engine Co., Elmira, N. Y. "Keystone," "Paragon."

Atlas—See Northern Fire Apparatus Co.

Auto-Fyr—See U. S. Fire Extinguisher Co.

Badger Chemical Mfg. Co., 175 Reed St., Milwaukee, Wis. "Mitchell," "Wisconsin."

Badger Fire Extinguisher Co., 175 Portland St., Boston, Mass.

Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.

Buffalo Chemical Fire Extinguisher Co., 61-69 Carroll St., Buffalo, N. Y. "Ecuarsunl."

Childs Co., O. J., 138 Liberty St., Utica, N. Y. "Utica."

Deluge—See Prospect Mfg. Co.

Diener Mfg. Co., George W., 400-20 Monticello Ave., Chicago, Ill.

Eclipse—See Haverhill Fire Appliance Co.

Ecuarsunl—See Buffalo Chemical Fire Extinguisher Co.

Esco—See Emmons Specialty Co.

Ever-Ready—See Republic Chemical Fire Engine Co.

Federal Chemical Works, 979-81 Central Ave., Minneapolis, Minn.

Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y.

Fire-Fly—See Northwestern Chemical Co.

Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.

Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.

Firer Mfg. Co., 2039 S. Morgan St., Chicago, Ill.

Foamite Firefoam Co., 200 Fifth Ave., New York, N. Y.

Fyr-Fyter Co., 221 Crane St., Dayton, O.

Gammeter-Brodbeck Sales Co., 45 N. High St., Akron, O.

General Mfg. Co., 18th & Pine Sts., St. Louis, Mo.

Guardene—See Pyrene Mfg. Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker."
(See page 220.)

Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O. "Queen."

Haverhill Fire Appliance Co., Haverhill Nat'l Bk. Bldg., Haverhill, Mass. "Eclipse."

J-M—See Johns-Manville Co.

J-M Success—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "Manville," "J-M Success," "J-M."

Keystone—See American-La France Fire Engine Co.

Knight & Thomas, 213 Summer St., Boston, Mass.

La May Mfg. Co., 30 N. Water St., Rochester, N. Y.

Manville—See Johns-Manville Co.

Miller Chemical Engine Co. of Ohio, 1415 W. Ninth St., Cleveland, O.

Minimax Co., 77 Beekman St., New York, N. Y.

Mitchell—See Badger Chemical Mfg. Co.

Everything is listed under the NOUN or principal word

RADIATOR COOLING FANS

for

Trucks, Tractors
Pleasure Cars

PLAIN BEARING with Oil Pressure
Lubrication.

HYATT BEARING.

BALL BEARING.

TIMKEN BEARING.

Your inquiries solicited

COPE-SWIFT CO.

Incorporated

McDougall Avenue at Wight Street
DETROIT, MICH.

Positive Protection Minimum Cost

Dealers are waking up to the tremendous field for the sale of an efficient low-priced Fire Extinguisher. The "Auto-Pyr" Extinguisher has no mechanical complications. It is simple to use and astonishes everyone by instantly annihilating a blaze.



Superior to Liquid Chemicals. No leakage, evaporation or corrosion.

Price, \$3.50

Sells on sight. Every sale means a big profit.

Write for Exclusive Agency proposition. Plenty of good territory yet to be had.

The best Fire Extinguisher for motor car and garage protection. Also needed in every home.

U. S. Fire Extinguisher Co.
Syracuse, N. Y. U. S. A.

The Autoist's Garment

=

Made exclusively
for motorists;
easy to slip on—
easy to slip off.
Comes packed in
a neat khaki bag.

*Write for descriptive
circular and prices.*

=

Beardsley & Haft Co.
COLUMBUS
OH IO

SLIPOVERS
Slips Over No Buttons—No Hooks
Protects the Motorist's Clothes



NITRO SUNDERMAN CARBURETOR Special Outfit for Ford Cars

Atomizes the gas into such a fine mist that every particle builds up all its power. This complete vaporization is an exclusive NITRO feature—it enables you to

The NITRO carburetor gives a clean-burning, hard-hitting mixture at all speeds—smooths out the power impulses into a steady stream of energy—makes the Ford run like a six-cylinder.

Use Half Gas and Half
Kerosene and Save 10
Cents on Every Gallon

\$20.00

Write for Booklet

Sunderman Corporation
Newburgh, N. Y.

Please mention The Automobile Trade Directory

EXTINGUISHERS, Garage Fire (Continued)

New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.
 Northern Fire Apparatus Co., 2422 University Ave., S. E., Minneapolis, Minn. "Atlas."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Fire-Fly."
 (See page 277.)
 Nu-Ex Fire Appliance Co., Columbus, O.
 Paragon—See American-La France Fire Engine Co.
 Pronto—See Allen Corp.
 Prospect Mfg. Co., Prospect, O. "Deluge."
 Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y. "Guardene."
 Queen—See Harker Mfg. Co.
 Racine Iron & Wire Works, Racine, Wis.
 Regina—See Rex-Harris Fire Appliance Co. of N. Y.
 Republic Chemical Fire Engine Co., Urbana, O. "Ever-Ready."
 Rex-Harris Fire Appliance Co. of N. Y., 89 E. 19th St., New York, N. Y. "Regina," "Acme," "Victor."
 Safety Fire Extinguisher Co., 291 Seventh Ave., New York, N. Y.
 Silvers Mfg. Co., Waterloo, Ia.
 Standard Extinguisher Co., 24 Binford St. (S. Boston), Boston, Mass.
 Stempel Fire Extinguisher Co., 4250 N. 20th St., St. Louis, Mo.
 U. S. Fire Extinguisher Co., Syracuse, N. Y. "Auto-Fyr" (See page 393.)
 U. S.—See United Mfg. Co.
 United Mfg. Co., Toledo, O. "U. S."
 Utica—See Childs Co.
 Victor—See Rex-Harris Fire Appliance Co. of N. Y.
 Wisconsin—See Badger Chemical Mfg. Co.
 Wonder Worker—See Hall-Thompson Co.

EXTRACTORS, Broken Tap

Walton Co., 204 Pearl St., Hartford, Conn.

EXTRACTORS, Bushing, for Fords

Buffum Tool Co., Louisiana, Mo.
 (See page 395.)
 Conant & Donelson Co., Conway, Mass. "Reliable."
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass. "Jiffy."
 Hinkley-Myers Co., Water St., Jackson, Mich.
 J & B Mfg. Co., Pittsfield, Mass.
 (See page 949.)
 Jiffy—See Dyer Co.
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."
 O. K.—See West Haven Mfg. Co.
 Reliable—See Conant & Donelson Co.
 West Haven Mfg. Co., 23 Elm St. (West Haven), New Haven, Conn. "O. K."
EXTRACTORS, CAR—See Winches and Blocks

EXTRACTORS, Stud Bolt

Cleveland Twist Drill Co., Cleveland, O. "Easy-out." (See page 365.)
 Easy-out—See Cleveland Twist Drill Co.
 Sprung Mfg. Co., E., 3316 Northwestern Ave., Detroit, Mich.

EXTRACTORS, TAP — See Extractors, Broken Tap

EYE PROTECTORS—See Goggles, Mechanics' and Welders'

EYE SHIELDS—See Goggles

EYEBOLTS, AIRPLANE—See Bolts, Airplane Eye

EYELETS—See Grommets

EYES, SCREW—See Screw-Eyes

FABRIC, Aircraft

(See also Linen, Airplane)

Goodrich Co., B. F., 8 Main St., Akron, O.
 Pierce Mfg. Corp., Belleville Ave., New Bedford, Mass.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."
 Usco—See United States Tire Co.

FABRIC BELTS—See Belts, Endless Fabric

FABRIC CLEANERS—See Cleaners, Fabric

FABRIC CLUTCH DISCS—See Lining Brake

FABRIC, Cotton Tire

Atlas Mfg. Co.—See Brander & Curry.
 Bay State Cotton Corp.—See Turner Co.
 Bibb Mfg. Co., Macon, Ga.
 Brander & Curry, 30 E. 42d St., New York, N. Y. (Sole Distributors for Fitchburg Duck Mills, Fitchburg, Mass., and Atlas Mfg. Co., Bessemer City, N. C.)
 Brighton Mills, Brighton & Manhattan Aves., Passaic, N. J.
 Caldwell Co., R. J., 15 Park Row, New York, N. Y.
 Catlin & Co., 345 Broadway, New York, N. Y.
 Connecticut Mills Co., Danielson, Conn.
 Fitchburg Duck Mills—See Brander & Curry.
 Jenckes Spinning Co., Pawtucket, R. I.
 Lane & Co., J. H., 334 Fourth Ave., New York, N. Y. (Sole Selling Agents for West Boylston Mfg. Co., East Hampton, Mass.)
 Manhasset Mfg. Co., Turks Head Bldg., Providence, R. I.
 Marlboro Cotton Mills, McColl, S. C.
 Meyer Tire Duck Co., John H., 708 Frelinghuysen Ave., Newark, N. J.
 Salmon Falls Mfg. Co., 50 State St., Boston, Mass.
 Sears & Co., Wellington, 93 Franklin St., Boston, Mass.
 Taylor, Armitage & Co., 120 Broadway, New York, N. Y.
 Turner Co., J. Spencer, 56 Worth St., New York, N. Y. (Sole Distributors for Bay State Cotton Corp., Lowell, Mass.)

Everything is listed under the NOUN or principal word

Trade Mark **Buffum Tools** Trade Mark
Reg. U. S. Pat. Off. Reg. U. S. Pat. Off.

SPECIFY THEM OF YOUR JOBBER—HE HAS THEM



Double Bent Ends Shaped Screw Drivers

No. 2125—4"x3/16" Blued Fin.....	\$0.25
No. 2126—5"x3/16" Blued Fin.....	.30
No. 2127—6"x5/16" Blued Fin.....	.35



Curved Bearing Scraper Sets

No. 1766—3" Blade.....	\$0.35
No. 1767—3 1/4" Blade.....	.50
No. 1768—4" Blade.....	.65
No. 1765—Set of 3 a box.....	1.50



**"Climax" Auto Chain
Repair Tools**

No. 1927—12 3/4".....	\$1.25
-----------------------	--------

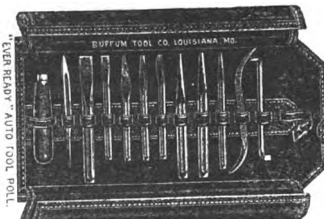


Cotter Pin Tools

No. 1896—5/16x7" N.P.....	\$0.25
No. 1900—5/16x7" Pol. Ends.....	.22
No. 1902—5/16x6" Oil Fin.....	.15

**Knurled or
Pin Punches**

No. 725 1/4x3/32x4".....	\$0.25
No. 726 1/4x4/32x4".....	.25
No. 727 1/4x5/32x4".....	.25
No. 728 1/4x6/32x4".....	.25
No. 729 1/4x7/32x4".....	.25
No. 730 1/4x8/32x4".....	.25
Polished Ends.	



**"Ever Ready" Auto Canvas
Tool Rolls**

Send for Special Tool Kit Catalog

No. 1823—Complete.....	\$2.25
------------------------	--------

**Automobile
Punches**

No. 658 5/16x1/4x5".....	\$0.30
No. 659 5/16x3/16x9" J.....	.30
No. 660 1/4x1/4x9".....	.30
No. 661 1/4x3/16x9".....	.30
No. 662 7/16x1/4x9".....	.30
No. 663 7/16x5/16x9".....	.30
No. 664 1/4x1/4x9".....	.30
No. 665 1/4x5/16x9".....	.30
Full Polished Blued Fin.	



**Combination
Pliers**

No. 2375—5" Blued.....	\$0.35
No. 2376—5" N.P.....	.50
No. 2377—6" Blued.....	.50
No. 2378—6" N.P.....	.75



**Bulk
Valve Lifters**
Price \$2.00



**Octagon
Center Punches**

No. 750—1/4x2/32x4".....	\$0.20
No. 751—5/16x3/32x4".....	.20
No. 752—1/4x4/32x4".....	.25
No. 753—7/16x5/32x4".....	.28
Polished Ends.	

Buffum Tool Company - Louisiana, Mo., U. S. A.
MANUFACTURERS

"High Grade Tools for High Grade Workmen"

Please mention The Automobile Trade Directory

FABRIC DOOR PROTECTORS—See Protectors, Door

FABRIC FAN BELTS—See Belts, Endless Fabric

FABRIC RADIATOR LINING—See Lining, Fabric Radiator

FABRIC SPEEDOMETER PINIONS—See Gears and Pinions, Speedometer

FABRIC UNIVERSAL JOINT DISCS—See Discs, Universal Joint

FABRICS, UPHOLSTERY AND TOP—See Cloth; also Broadcloth; also Silk; also Whipcord

FACINGS, BRAKE—See Lining, Brake

FACINGS, CLUTCH—See Lining, Brake; also Leather, Friction

FACINGS, FRICTION—See Frictions, Fibre

FACINGS, TRANSMISSION, FOR FORDS—See Lining, Brake

FAN BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt

FAN BELT GUIDES—See Guides, Fan Belt

FAN BELTS—See Belts, Spiral Wire; also Belts, Endless Fabric; also Belting, Leather

FAN BELTS FOR FORDS—See Belts, Fan

FAN PULLEYS—See Pulleys, Pressed Steel

FANS, Radiator

(See also Radiators)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Fans.) (See page 243.)

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Buffalo Pressed Steel Co., Buffalo, N. Y. Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 393.)

Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 943.)

Halvorsen-Roscoe—See U. S. Products Corp. Hardy Mfg. Co., Pendleton, Ind. (See page 397.)

Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Hy-Duty—See Automotive Parts Co.

Konigsloew Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Oakes Co., Indianapolis, Ind. (See page 397.)

Pitter Fan Co., 208 S. LaSalle St., Chicago, Ill.

Service Products Corp., Indianapolis, Ind. (See page 397.)

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Spencer Metal Products Co., Spencer, (See page 508.)

Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.

U. S. Products Corp., 220 S. Michigan Av Chicago, Ill. "Halvorsen-Roscoe."

FANS, Radiator, for Fords

Allied Steel Products Co., 7 Walnut St. Aurora, Ill.

American Aero Co., So. Bend, Ind. "Juelson" Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Fans.) (See page 243.)

Ashland Products Co., 50 E. Ninth St. Ashland, O. "Wind Jammer." (See page 539.)

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Dunham Co., Thos., Aurora, Ill. (See page 163.)

Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Howe Lamp & Mfg. Co., 115-23 E. Ontario St. Chicago, Ill.

Hy-Duty—See Automotive Parts Co.

Juelson—See American Aero Co.

Spencer Metal Products Co., Spencer, (See page 508.)

U. S. Products Corp., 220 S. Michigan Ave. Chicago, Ill. "Halvorsen-Roscoe."

Wind Jammer—See Ashland Products Co. Wizzard Fan Co., 2816 Riverside Ave., Minneapolis, Minn.

FANS, Tractor Radiator

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 413.)

Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Hy-Duty—See Automotive Parts Co.

Oakes Co., Indianapolis, Ind. (See page 397.)

Service Products Corp., Indianapolis, Ind. (See page 397.)

U. S. Products Corp., 220 S. Michigan Ave. Chicago, Ill. "Halvorsen-Roscoe."

FARM LIGHTING PLANTS—See Plant Farm Lighting

FASTENERS, Bolt

Alligator—See Flexible Steel Lacing Co. Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Conn." (See page 243.)

Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."

Blakes—See Greene, Tweed & Co.

Campbell—See Perkins-Campbell Co.

Everything is listed under the NOUN or principal word

HARDY FANS

FOR

Cars :: Trucks :: Tractors

Hardy Fans are light, strong, durable and silent. They use a minimum of power yet produce a volume of air that permits of maximum radiator efficiency.

Hardy Fans are designed and built with the desire to maintain an even balance of quality, workmanship and results.

Send us your blue prints and engine designs and we will quote you.

"Hardy Fans are Better"
"Hardy Prices are Lower"

Manufactured by

HARDY MANUFACTURING COMPANY
PENDLETON, INDIANA

Oakes^{Efficient Cooling} Fans

Right design, high grade construction, dependable bearings, utmost cooling capacity, quiet operation, long life—these qualities make Oakes Fans first choice of over 250 well-known builders of cars, trucks and tractors.

Our engineers will gladly give you complete data on the best Oakes Fan for your engine. Send us full particulars of your needs.

The **OAKES COMPANY**
Indianapolis. U.S.A.

SERVICE FAN



For all makes Passenger Cars, Trucks and Tractors.

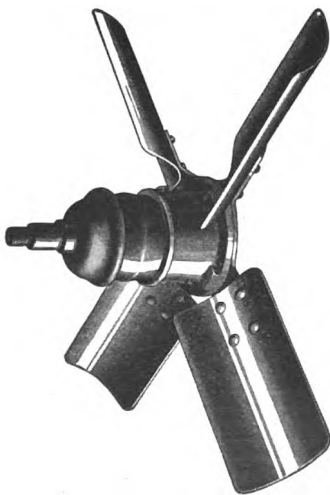
We combine Maximum Cooling with Superior Bearing Construction.

Our Flood Oiling Fans are Standard Equipment with a large number of the leading manufacturers.

Let us tell you why.

Write Our Engineering Dept.

SERVICE PRODUCTS CORP.
Indianapolis, Indiana



PATENT PENDING

Please mention The Automobile Trade Directory

FASTENERS, Belt (Continued)

Clipper Belt Lacer Co., 1043 Front Ave., N. W., Grand Rapids, Mich.

Conn—See Asch & Co.

Crescent Belt Fastener Co., 381 Fourth Ave., New York, N. Y.

Eagle—See Manufacturers' Belt Hook Co.

Flexible Steel Lacing Co., 4807-31 Lexington St., Chicago, Ill. "Alligator."

Greene, Tweed & Co., 109 Duane St., New York, N. Y. "Blakes," "Morans."

Lakewood—See McMonies, J. R.

Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, O.

McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Lakewood."

Manufacturers' Belt Hook Co., 1321 W. Congress St., Chicago, Ill. "Eagle."

Morans—See Greene, Tweed & Co.

Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Powers Mfg. Co., Waterloo, Iowa. (See page 581.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

W. W.—See Ballard-Sutcliffe Co.

FASTENERS, BOW—See Holders, Top Bow**FASTENERS, BOW, FOR FORDS—See Clamps, Top Bow****FASTENERS, BOX—See Catches, Spring****FASTENERS, CHAIN—See Fasteners, Tire Chain****FASTENERS, Curtain**

Acme—See Scovill Mfg. Co.

Anzo Dot—See Carr Fastener Co.

Arkin Fastener Co., East Candia, N. H. "Arklok."

Arklok—See Arkin Fastener Co.

Boston Fastener Co., 641-43 Atlantic Ave., Boston, Mass. "Push & Pull."

Brewer-Tichenor Corp., Cortland, N. Y. (See page 573.)

Brewster—See Cowles & Co.

Burco—See Murphy Co.

Carr Fastener Co., Boston, Mass. "Durable Dot," "Common Sense," "Lift the Dot," "Veltex Dot," "Anzo Dot." (See page 399.)

Clinch Fastener Corp., 2335 W. Van Buren St., Chicago, Ill. (See page 979.)

Common Sense—See Carr Fastener Co.

Cowles & Co., C., New Haven, Conn. "Brewster," "Ideal," "Perfect," "Success."

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Durable Dot—See Carr Fastener Co.

English & Mersick Co., New Haven, Conn. (See page 571.)

Federal Equipment Co., Union St., Marietta, O. Ideal—See Cowles & Co.

Jarv' Co., Charles L., Gildersleeve, Conn.

John & George, Little's Ct., Merrimack, Mass.

Kentucky—See Neider Co.

Leader—See Neider Co.

Lift the dot—See Carr Fastener Co.

Lift the Dot—See Metal Stamping Co.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y. "Perfecto," "Lift the Dot," "Standard," "New Perfection."

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)

Murphy Co., G. W. J., Carriage Ave., Amesbury, Mass. "Burco." (See page 439.)

Neider Co., F. A., Augusta, Ky. "Peerless," "Leader," "Kentucky."

New Standard—See Metal Stamping Co.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Perfection."

Novelty Mfg. Co., 125 Maple St., Waterbury, Conn. "Stronghold."

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Paragon—See Doerner & Co.

Peerless—See Neider Co.

Perfect—See Cowles & Co.

Perfection—See North & Judd Mfg. Co.

Perfecto—See Metal Stamping Co.

Push & Pull—See Boston Fastener Co.

Reliable—See Smith & Co.

Roshm & Davison, 353 W. Woodbridge St., Detroit, Mich.

Scovill Mfg. Co., Waterbury, Conn. "Acme." (See page 831.)

Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Reliable."

Soas Mfg. Co., Grand Ave., & Bergen St., Brooklyn, N. Y.

Standard—See Metal Stamping Co.

Strong Co., M. H., 168 South Ave., Rochester, N. Y.

Stronghold—See Novelty Mfg. Co.

Success—See Cowles & Co.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

United States Fastener Co., 95 Milk St., Boston, Mass.

Veltex Dot—See Carr Fastener Co.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

FASTENERS, Hood

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Anchor—See North & Judd Mfg. Co.

Antwood Brass Works, Grand Rapids, Mich. (See page 479.)

Bassick Co., Bridgeport, Conn. (See page 323.)

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

English & Mersick Co., New Haven, Conn. (See page 571.)

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Evertight—See Gemco Mfg. Co.

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)

Ford-Clark Co., 3125 Perkins Ave., Cleveland, Ohio.

Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. "Evertight." (See pages 172 and 173.)

Graham & Co., James, 293 Wooster St., New Haven, Conn.

Everything is listed under the NOUN or principal word



"Guaranty Plan" Banking

is the logical method of handling Automobile and Truck credit sales. It consists of:

A Credit Service that protects dealer's interests—

A Collection Service that collects the money—

Prompt remittances—

100% cash for Dealers.

Write for charts and forms

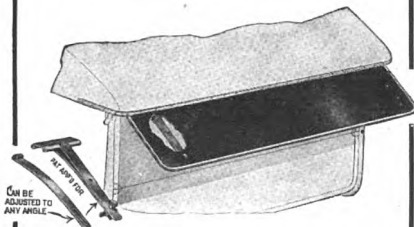
CONTINENTAL GUARANTY CORP.

248 Madison Avenue New York

Affiliated with Guaranty Banking Corporation
Continental & Commercial Bank Bldg.
Chicago, Ill.

Toronto London

The Monarch Auto Visor



Most Practical and Neatest Sunshield Made

SPECIAL FEATURES

THE GREEN UNDERSIDE (Restful on the Eye)	NO SIDE BRACES (To Obstruct the View) Adjustable in a moment to any angle. Retail price, \$4.50 put on car.
ROUND CORNERS (Improve the appearance)	

Dealers and Jobbers—Write for a really interesting proposition today

THE MONARCH CARRIAGE GOODS CO.

Marshall and Spring Grove Avenues
Cincinnati, Ohio

TRADE THE "DOT" LINE OF FASTENERS MARK



"LIFT THE DOT" FASTENER. It snaps together and locks securely. Unlocks by simply lifting dotted side of socket. The recognized standard fastener for auto tops and curtains.

"DURABLE DOT" FASTENER. The most rugged glove fastener ever made; indestructible. Does not tear out of fabric. Quickly and cheaply attached.

"VELTEX DOT" CARPET FASTENER. Almost universally used for auto carpets.

"ANZO DOT" FASTENER. A friction snap fastener of improved design.

"COMMON SENSE TURNBUTTON" FASTENER. We make a most complete line of turnbutton fasteners. Large stock. Prompt deliveries.

CARR FASTENER COMPANY

Boston, 39, Mass., U. S. A.

TRADEMARK

Reg. U. S. Pat. Off.

Carr Fastener Company of Canada, Ltd.
Hamilton, Ontario

International Fasteners, Ltd.
Stapleford, Notts, England

Detroit Branch: 900 Woodward Avenue

Please mention The Automobile Trade Directory

FASTENERS, Hood (Continued)

Greer, Fredric, 525 W. Van Buren St., Chicago, Ill.

Holt-On—See Holton Hood Clip Co.

Holton Hood Clip Co., 513 Shelby St., Detroit, Mich. "Holt-On."
(See page 403.)

Hunt & Co., E. J., Equity Bldg., Dayton, O.
(Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.

Medina Stamping & Machine Co., 317 Main St., Medina, N. Y.

Mayer Scale & Hardware Co., 328 Adams St., Newark, N. J.

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O.
(See page 399.)

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Pfau Mfg. Co., Cincinnati, O.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Rostand Mfg. Co., Milford, Conn.

Sergeant Mfg. Co., New & Summit Sts., Newark, N. J.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Stewart Mfg. Co., Oakland, Cal.
(See page 249.)

Thomson Mfg. Co.—See Hunt & Co.

United Motors Co., 675 North St., N. W., Grand Rapids, Mich.

Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 505.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 263.)

Western Metal Specialty Co., Milwaukee, Wis. (See page 557.)

White Products Co., 2204 S. Michigan Ave., Chicago, Ill.

FASTENERS, GATE—See Fasteners, Truck Body Gate

FASTENERS, HOOD, FOR FORDS—See Clamps, Hood

FASTENERS, STORAGE BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down

FASTENERS, Tire Chain

Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.

Cross Chain Fastener Co., Rose Bldg., Cleveland, O. "Q. D."

Exytite Sales Co., 58-62 Congress Ave., New Haven, Conn.

Faus, Jr., Jacob, 1917 12th St., Boulder, Colo.

Frey, 497 Ellicott St., Buffalo, N. Y.

Q. D.—See Cross Chain Fastener Co.

FASTENERS, Truck Body Gate

Grip-Lok—See Reese Mfg. Co.

Reese Mfg. Co., 46 Bagg St., Detroit, Mich.
"Grip-Lok."

FASTENERS, Ventilating Hood, for Fords

V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.

FEED SYSTEMS, GASOLINE—See Systems, Gasoline Feed; also Tanks, Vacuum; also Regulators, Tank Pressure

FEEDERS, WATER—See Moisteners, Air

FELLOES, WOOD—See Rims, Wood

FELT GASKETS—See Washers, Felt

FELT GASKETS FOR FORDS—See Gaskets, Felt

FELT LUBRICATOR WICKING — See Wicking, Felt Lubricator

FELT, Sheet

(For Felt Washers or Gaskets—See Washers, Felt)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 403.)

American Felt Co., 100 Summer St., Boston, Mass. (See page 403.)

Bacon Felt Co., Winchester, Mass.

Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See pages 401 and 1041.)

Commonwealth Felt Co., 76 Summer St., Boston, Mass.

Eastern Felt Co., Canal St., Winchester, Mass.

Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.

Lowell Felt Co., 48 Warren St., Lowell, Mass.

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Stroock & Co., S., 11-13 E. 26th St., New York, N. Y.

Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill.

FELT TESTING INSTRUMENTS—See Instruments, Rubber and Felt Testing

FELT, Upholstery

(For use in place of hair or moss; for Hair—See Hair Upholstery; for Moss—See Moss, Upholstery)

Detroit Felt Co., 3297 Hubbard St., Detroit, Mich.

Newark Hair Felt Co., Lansdale, Pa.

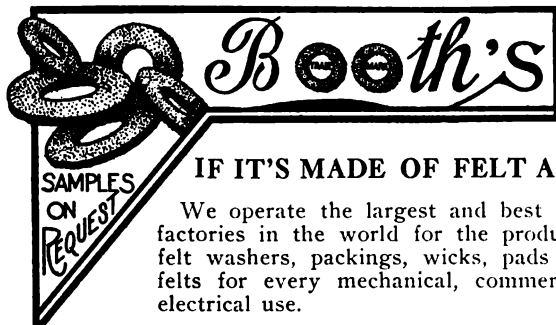
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

Textile By-Products Corp., 149 Church St., New York, N. Y.

FELT WASHERS—See Washers, Felt

FELT WASHERS FOR FORDS—See Gaskets, Felt

Everything is listed under the NOUN or principal word



IF IT'S MADE OF FELT ASK BOOTH

We operate the largest and best equipped factories in the world for the production of felt washers, packings, wicks, pads and cut felts for every mechanical, commercial and electrical use.

We have no sales agencies

Each factory is managed by experienced felt experts.

Please write nearest factory for a copy of "Booth Mechanical Felt Goods."

The Booth Felt Company, Inc.

463-473 Nineteenth Street
Brooklyn, N. Y.

732 Sherman Street
Chicago, Ill.

FELT WASHERS-GASKETS



T. R. BRAWLEY

Manufacturer of FELT SPECIALTIES

General Offices and Factories:
275-277 20th Street, Brooklyn, N. Y.

Please mention The Automobile Trade Directory

FENDER BRACES FOR FORDS—See Braces, Mud Guard

FENDER CLAMPS FOR FORDS—See Braces, Mud Guard

FENDER COVERS—See Covers, Fender

FENDER PROTECTORS—See Covers, Fender

FENDER ROLLING MACHINES—See Machines, Fender Rolling

FENDER STRAIGHTENING TOOLS—See Tools, Fender Straightening

FENDER WIRING MACHINES—See Machines, Fender Wiring

FENDERS, Automobile

(Safety Devices for front of car; see also Bumpers, Automobile)

Burns Co., W. P., 109 N. Dearborn St., Chicago, Ill.
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Hersh & Bro., 657 Mill St., Allentown, Pa.
 International Sav-A-Life Fender Co., Guardian Bldg., Cleveland, O.
 Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
 Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Safety First Appliance Co., Woodward Bldg., Washington, D. C.
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)

FENDERS or MUD GUARDS, Leather

McKinnon Dash Co., Buffalo, N. Y. (See page 403.)

FENDERS or MUD GUARDS, Metal

A. B. & B. Sheet Metal Works, 2300-02 Fond du Lac Ave., Milwaukee, Wis.
 Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
 Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.
 Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
 Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."
 Brusco—See Brummeler's Sons Co.
 Bull Dog—See Fulton Co.
 Bush Mfg. Co., Hartford, Conn. (See page 787.)
 Chicago Mfg. Co., 1468-64 Michigan Ave., Chicago, Ill.
 Clayton & Lambert Mfg. Co., 10567 Knoll Ave., Detroit, Mich. (See page 1003.)
 Clayton's Sons, Frank B., 1227-38 N. 11th St., Philadelphia, Pa.
 Columbus Auto Brass Co., Columbus, O. (See page 477.)
 Cornwall Mfg. Co., Cleveland, O. (See page 937.)
 Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
 Fostoria Pressed Steel Co., Fostoria, O. (See page 405.)
 Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawcoq." (See page 125.)
 Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.
 Maco—See Automotive Sheet Metal Co.
 Martin Metal Mfg. Co., Wichita, Kans.
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 3171 Bellevue Ave., Detroit, Mich.
 Moline Pressed Steel Co., Fifth St., East Moline, Ill.
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Mullins Body Corp., 182 Franklin Ave., Salem, O.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
 Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.
 Peacock Radiator Guard Co., 275 Jefferson Ave., E., Detroit, Mich.
 Perfex Radiator Co., Racine, Wis.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 S. J.—See Shotwell-Johnson.
 Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.
 Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.
 Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 349.)
 Standard Auto Radiator Co., 244 W. 53d St., New York, N. Y.
 Stewart Iron Works Co., Cincinnati, O.
 Thomas Co., W. H.—See Fulton Co.
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 339.)
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 Universal Metal Parts Mfg. Co., 602-04 W. 52d St., New York, N. Y.
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)
 Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.
 Wilson & Bowen, 1318 S. Main St., Los Angeles, Cal.
 York Corrugating Co., York, Pa. (See page 931.)

FENDERS or MUD GUARDS, Wood

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Everything is listed under the NOUN or principal word

A.F.Co.

felt parts

for the
**Automotive
Industries**

Cut and Shaped by
the World's Leading

Felt Manufacturers

We offer a service that involves
Felt Making as well as Felt Cut-
ting. Have you our sample card?
Inquiries invited.

**American Felt
Company**



100 Summer Street.....Boston
114 East 13th Street...New York
325 South Market St....Chicago

ADVANCE

MODULIMETER TESTED

Felt

*Washers
and
Gaskets
for
Ford Cars*

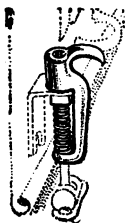
**WASHERS
WICKS
GASKETS
PACKINGS
STRIPS
PLUGS
DISCS
and SPECIAL
CUTTING**

THE FIRST LINE TO BE SOLD
UNDER A STANDARD
TEST SPECIFICATION

ADVANCE FELT & CUTTING CO.
315-E So. Jefferson Street
CHICAGO

HOLTON HOOD CLIPS

Means Better Clips for
CHEVROLET and FORD CARS



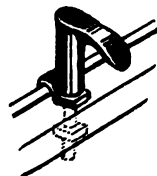
For Chevrolet

BECAUSE they are adjustable Spring Clips
BECAUSE they are easily installed, No Drilling
BECAUSE they are A JOY TO USE
BECAUSE they STOP HOOD RATTLES
And improve the appearance of these cars
Samples and prices to DEALERS and JOBBERS on request

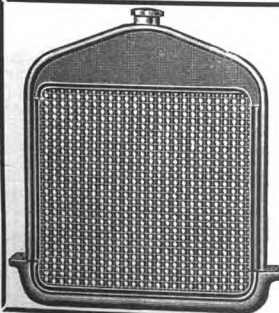
Patented and Manufactured by
HOLTON HOOD CLIP CO.

513 Shelby St.

Detroit, Mich.



For-a-Ford



THE McKINNON RADIATOR

"REALLY CELLULAR"

COMPLETE FOR FORD CARS

SOME STRONG POINTS

*Endorsed and Used on Prominent Makes of Cars. No Experiment
One Million in Use on Higher Priced Cars.*

*Soldered All Over. Consequently Strong, Rigid Mass of Separate
Cells. In case of Freezing, Provision is Made for Expansion of
Tubes. Facility of Repair in Case of Damage.*

ASK FOR LEAFLET

McKINNON DASH COMPANY

Radiator Division

BUFFALO, N. Y.

U. S. A.

Please mention The Automobile Trade Directory

**FENDERS or MUD GUARDS, for
Fords**

(Including both standard and special crown fenders)
 A. B. & B. Sheet Metal Works, 3300-02 Fond
 du Lac Ave., Milwaukee, Wis.
 Blitwell Accessories Co., 401 E. 23rd St., New
 York, N. Y.
 Black Crown—See Murray Auto Parts Mfg.
 Co.
 Columbus Auto Brass Co., Columbus, O.
 (See page 477.)
 Corcoran Mfg. Co., Section & Foraker Aves.,
 (Norwood), Cincinnati, O. "Peerless."
 Hayes Mfg. Co., 4525 Maybury Grand Ave.,
 Detroit, Mich.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan
 Ave., Chicago, Ill.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati, O.
 (See page 125.)
 Motors Metal Mfg. Co., 5936 Milford Ave.,
 Detroit, Mich. "Superior."
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Peacock Radiator Guard Co., 275 Jefferson
 Ave., E., Detroit, Mich.
 Peerless—See Corcoran Mfg. Co.
 Saginaw Sheet Metal Works, 2060 Genesee
 Ave., Saginaw, Mich.
 Superior—See Motors Metal Mfg. Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St.,
 New York, N. Y.
 York Corrugating Co., York, Pa.
 (See page 931.)

**FENDERS or MUD GUARDS,
Tractor**

Brummeler-Ruggles Metal Products Co., 1215
 Ionia Ave., S. W., Grand Rapids, Mich.
 Bull Dog—See Fulton Co.
 Champion Milk Cooler Co., 52-60 Owego St.,
 Cortland, N. Y.
 Chicago Mfg. Co., 1458-64 Michigan Ave.,
 Chicago, Ill.
 Clayton & Lambert Mfg. Co., 10567 Kno-
 dell Ave., Detroit, Mich.
 (See page 1003.)
 Columbian Steel Tank Co., 1601-21 W. 12th
 St., Kansas City, Mo.
 Corcoran Mfg. Co., Section & Foraker Aves.,
 (Norwood), Cincinnati, O.
 Derby Coppersmithing & Sheet Metal Con-
 tracting Co., Derby, Conn.
 Duro—See Fouts Co.
 Fouts Co., C. C., Woodlawn & B. & O. Ry.,
 Middletown, O. "Duro."
 Fulton Co., 75th & National Aves., Mil-
 waukee, Wis. (Sole Distributors for W.
 H. Thomas Mfg. Co., Spencer, Ia. "Bull
 Dog.") (See page 1019.)
 Hersh & Bro., 657 Mill St., Allentown, Pa.
 Kells Mfg. Co., W. J., 521-25 W. 45th St.,
 New York, N. Y.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan
 Ave., Chicago, Ill.
 Made-O-Metal—See Pandolfo Mfg. Co.
 Moore Mfg. Co., Concrete & Water Sts.,
 Waterloo, Iowa.
 Otwell Tractor Equipment Co., 6538 Livernois
 Ave., Detroit, Mich.
 Pandolfo Mfg. Co., St. Cloud, Minn. "Made-
 O-Metal."
 S-W-S Co., Minneapolis, Minn.
 (See page 457.)
 Thomas Mfg. Co., W. H.—See Fulton Co.
 Wels Mfg. Co., Henry, Atchison, Kans. "Wels-
 teel."

Welsteel—See Wels Mfg. Co.
 York Corrugating Co., York, Pa.
 (See page 931.)

**FENDERS or GUARDS, Truck
Radiator**

Atlantic Welding Works, 30th & Callowhill
 Sts., Philadelphia, Pa. "Arm weld."
 Arm weld—See Atlantic Welding Works.
 Cochran Platon Corp., Detroit, Mich.
 (See page 709.)
 Fundamental Corp., 270 Union Ave., Brook-
 lyn, N. Y. "Warman."
 Hotchkiss Metal Form Co., 16 Jarvis St.,
 Binghamton, N. Y. (See page 335.)
 Irving Iron Works Co., Long Island City,
 N. Y.
 Mansfield Steel Corp., 954 E. Milwaukee Ave.,
 Detroit, Mich.
 Mason & Co., F. C., St. Johns, Mich.
 Sheet Steel Products Co., Bryan, O.
 Warman—See Fundamental Corp.

**FENDERS or GUARDS, Truck Ra-
diator for Fords**

A. B. & B. Sheet Metal Works, 3300-02 Fond
 du Lac Ave., Milwaukee, Wis.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati,
 O. "Lawco." (See page 125.)

**FERRO MOLYBDENUM—See Molybdenum,
Ferro**

**FERRULES, AIRPLANE WIRE—See Thim-
bles and Ferrules, Wire**

FIBRE CLEATS—See Cleats, Fibre

**FIBRE GEARS—See Gears, Rawhide and
Fibre**

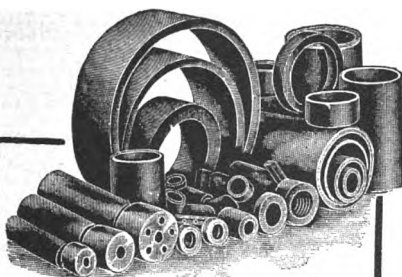
FIBRE, Hard

(Sheet, Rod and Tube)
 American Vulcanized Fibre Co., 573
 Equitable Bldg., Wilmington, Del.
 "Vul-Cot." (See page 405.)
 Brandywine Fibre Products Co., 1406
 Walnut St., Wilmington, Del.
 (See page 405.)
 Continental Fibre Co., Newark, Del.
 (See page 207.)
 Delaware Hard Fibre Co., Wilmington,
 Del. (See page 405.)
 Diamond F—See Diamond State Fibre Co.
 Diamond State Fibre Co., Bridgeport, Pa.
 "Diamond F."
 Fibre Specialty Mfg. Co., Kennett Sq., Pa.
 Keystone Fibre Co., Yorklyn, Del.
 National Fibre & Insulation Co., Box 284,
 Yorklyn, Del. "S-S." (See page 405.)
 S-S—See National Fibre & Insulation Co.
 Spaulding & Sons Co., J., Wheeler St., Tona-
 wanda, N. Y.
 Standard Fibre Co., 11-15 Miller St., Somer-
 ville, Mass.
 Vul-Cot—See American Vulcanized Fibre Co.
 Wilmington Fibre Specialty Co., Wil-
 mington, Del. (See page 251.)

**FIBRE PINIONS—See Gears and Pinions,
Rawhide**

FIBRE TUBE—See Fibre, Hard

Everything is listed under the NOUN or principal word



Vulcanized Hard Rolled FIBRE TUBING

for

Electrical and Mechanical purposes:

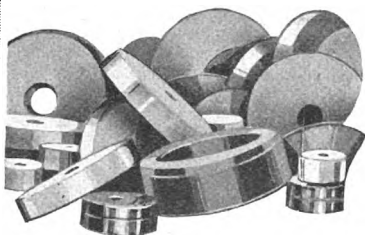
Handles, Linings, Spacers, Ferrules, Sleeves, Bushings,

for

AUTOMOBILE, TRUCK AND TRACTOR WORK.

Standard length tubing, or cut to length pieces, or turned, counterbored, edges rounded, or drilled to blue print. Let us figure with you on your requirements of fibre tubing or fibre tubing parts.

BRANDYWINE FIBRE PRODUCTS CO.
1406 Walnut Street, Wilmington, Delaware



For All Insulation --- Vul-Cot Fibre

*Machines as readily
as lead*

Vul-Cot Fibre comes in sheets, rods, and tubes. It's dense and tough and has an extremely low friction coefficient. This gives it the greatest wear resistance of any insulator.

Vul-Cot Fibre is always uniform — never contains fissures, hard or soft spots, grit or other foreign matter. Edge tools used in machining it are subjected to little wear. Here are the physical properties of *Vul-Cot Fibre*:

Tensile strength, 9,000 to 14,000 pounds per square in.; compressive strength, 32,000 to 67,000 pounds per square inch; resistance to shearing, 9,000 to 13,000 pounds per square inch; specific gravity, 1.2 to 1.5; electrical rupture, 100 to 400 volts per mil.

And these are the properties that have made *Vul-Cot Fibre* "The Material with a Million Uses." We have a book bearing this title. We'll send it. Tell us where. Also consult the *Vul-Cot* Service Dept. in your individual problems.

AMERICAN VULCANIZED FIBRE CO.

573 Equitable Building, Wilmington, Del.

Sales Offices

Boston Philadelphia Cleveland Chicago
New York Pittsburgh Detroit St. Louis
Complete Stock for Immediate Shipment at Chicago

Western Agents

Western Electric Company
Incorporated
San Francisco Seattle Portland
Los Angeles Oakland

Canadian Agents

Northern Electric Company
Limited
Montreal Toronto Winnipeg
Ottawa Halifax Calgary
Regina Vancouver



SUPER-SS SEASONED FIBRE

Inside and outside, "S-S" Fibre demonstrates the unusual care expended in its making by its wonderful durability, its extraordinary tensile and shearing strength.

Its high electrical resistance is due to long, slow, natural curing, ageing and seasoning.

The "S-S" Fibre Book contains the complete story of Super-Seasoned Fibre; send for it.

National Fibre & Insulation Co.

1024 Yorklyn, Delaware

New York	Omaha	Cleveland
Chicago	Pittsburgh	Birmingham
Philadelphia	Boston	Salt Lake City
Detroit	Rochester	Baltimore
San Francisco	St. Louis	Havana, Cuba
London, England	Montreal, Canada	

Please mention The Automobile Trade Directory

FIBROUS GASKETS—See Gaskets, Fibrous for Fords

FIELD COIL WINDINGS—See Windings, Starter and Ignition

FIFTH WHEELS—See Wheels, Fifth

FILES and RASPS

Akron File Co., 1008 Grant St., Akron, O.
 American Swiss File & Tool Co., 24 John St., New York, N. Y.
 Barnett Co., G. & H., 1078 Franklin Ave., Philadelphia, Pa. "Black Diamond."
 Black Diamond—See Barnett Co.
 Chatterton File Works, 38 Randall St., Providence, R. I.
 Chelsea File Works, Sherman St., Norwich, Conn.
 Colonial File Co., 167-70 Tenenac St., Neponset, Mass. "Puritan."
 Delta File Works, 3227 Frankford Ave., Philadelphia, Pa.
 Disston & Sons, H., Tacony, Philadelphia, Pa.
 Gem City File Works Co., 1120-24 Broadway, Quincy, Ill.
 Gold Medal File Co., 20th St. & Allegheny Ave., Philadelphia, Pa.
 Graves File Co., 67 N. J. R. R. Ave., Newark, N. J.
 Grobet—See Montgomery & Co.
 Hayes File Co., 1980 Franklin St., Detroit, Mich.
 Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.
 Johnson & Bro., 603 Summer St., Newark, N. J. "Reliance."
 McCaffrey File Co., Fifth & Berks Sts., Philadelphia, Pa.
 Madden & Morrison File Co., 76-78 Dolson Ave., Middletown, N. Y.
 Montgomery & Co., 105-07 Fulton St., New York, N. Y. (Importers.) "Grobet."
 Murcott & Campbell, 296-300 Union Ave., Brooklyn, N. Y.
 Nicholson File Co., 23 Acorn St., Providence, R. I. "Superior," "Spark."
 Puritan—See Colonial File Co.
 Reliance—See Johnson & Bro.
 Rex File & Saw Co., New Comerstown, O.
 Reynolds Bros., 180 N. Water St., Columbus, O.
 Simonds Mfg. Co., North St., Fitchburg, Mass.
 Spark—See Nicholson File Co.
 Superior—See Nicholson File Co.
 Trojan—See Troy File Works.
 Troy File Works, Congress St., Troy, N. Y. "Trojan."
 Westphal File Co., 467 31st St., Milwaukee, Wis.
 Whitaker Mfg. Co., Chicago, Ill.
 (See page 1075.)

FILLERS, Aircraft Wood

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valsepar."
 Valsepar—See Valentine & Co.

FILLERS, Automatic Storage Battery

(Tank and special valves to attach to car for supplying water to the battery automatically; for Storage Battery Springs—See Hydrometers)

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
 Huntco—See Hunter Corp.
 Hunter Corp., John, 108 Cayuga St., Fulton, N. Y. "Huntco."
 Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.
 Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.
 Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (New York, New Jersey and Connecticut Distributors for "Huntco" Fillers. (See page 177.)

FILLERS, BATTERY—See Fillers, Automatic Storage Battery

FILLERS, GREASE GUN—See Loaders, Grease Gun

FILLERS, Paint

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
 Berry Bros., 211 Lieb St., Detroit, Mich. "Lionoll."
 Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "C. Q. P."
 Bridgeport Wood Finishing Co., New Milford, Conn. "Wheeler."
 C. Q. P.—See Bradley & Vrooman Co.
 Celox—See Valentine & Co.
 Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.
 Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."
 Chi-Var-Co.—See Chicago Varnish Co.
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
 Dibble Color Co., 445 Larned St., W., Detroit, Mich.
 Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.
 Esco—See Smith & Co.
 Flood & Conklin Co., 136 Chestnut St., Newark, N. J.
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
 Hildreth Varnish Co., 90 West St., New York, N. Y.
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O. "Krankno."
 Keystone Paint & Filler Co., Muncy, Pa.
 Krankno—See Johnston Paint Co.
 Lionoll—See Berry Bros.
 Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
 Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.
 Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.
 Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 Phoenix Paint & Varnish Co., 124 Market St., Philadelphia, Pa.
 Reno Bros. Paint Co., Pulaski, Pa.
 Rogers—See Detroit White Lead Works.
 St. Louis Surfacers & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.
 Schrack & Co., 152 N. Fourth St., Philadelphia, Pa.
 Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y. "Esco."

Everything is listed under the NOUN or principal word

"FELT"

Felt for All Mechanical Purposes

**FELT WASHERS
FELT GASKETS
FELT WICKS
FELT PADS
FELT STRIPS
FELT PACKINGS
FELT PLUGS
FELT DISCS**

Let Us Quote You Prices and
Send You Samples

ATLANTIC FELT CUTTING CO., Inc.
93rd St. and 4th Ave.,
Brooklyn, N. Y.



**STEERING WHEEL LOCKS
IGNITION HARNESS—for Fords
SPARK PLUG WIRES—for Fords
IGNITION TIMERS—for Fords
EXTENSION LIGHT CORDS
PORTABLE GARAGE LAMPS
AUTO REPAIR CREEPERS
COTTON WASTE
REPAIR ASSORTMENTS**
*Consisting of Lock Washers, Cotter
Pins, Terminal Assortments, etc.*

Send for Illustrated Catalog

FERRO MFG. CO.
2011 Michigan Ave. Chicago, Ill.

ERDMAN-GUIDER COMPANY

Builders of High Grade

CLOSED AUTOMOBILE BODIES

We have recently acquired an additional up-to-date plant, containing over 300,000 square feet of floor space, at Saginaw, Mich., where we are equipped to build closed bodies in quantities.

TWO PLANTS

DETROIT, MICH.

SAGINAW, MICH.

Main Office: 2290 Woodward Ave., DETROIT, MICH.

BALL BEARINGS REPAIRED

All makes and sizes

Expert Work, Prompt Service, Moderate Prices

The Bearings Co. of Penna., 684 N. Broad St., Phila.

Chicago Office: 2204 Michigan Avenue

Please mention The Automobile Trade Directory

FILLERS, Paint (Continued)

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Celox."

Wheeler—See Bridgeport Wood Finishing Co.

FILLERS, TIRE—See Compounds, Tire Filling

FILLERS, Tire Bead

(A ring applied on a quick detachable type of tire to permit applying on a straight side rim.)

Rubber City Clearing House Co., 1132-25 S. High St., Akron, O.

FILLERS, WOOD—See Fillers, Aircraft Wood

FILLING COMPOUNDS—See Compounds, Tire Filling

FILLING TUBES—See Tubes, Non-Explosive Tank Filling

FILTERS, GASOLINE—See Strainers or Separators, Gasoline

FILTERS, Oil

Bousman Mfg. Co., 1157 Plainfield Ave., N. E., Grand Rapids, Mich. "Perfect."
Perfect—See Bousman Mfg. Co.

FILTERS AND CLARIFIERS, CENTRIFUGAL—See Separators, Oil

FIN STRAIGHTENING TOOLS / FOR FORDS—See Tools, Radiator Fin Straightening

FIN TWISTERS FOR FORDS—See Tools, Radiator Fin Straightening

FINANCIAL BROKERS—See Brokers, Financial

FINISHING WASHERS—See Washers, Finishing

FINS, RADIATOR—See Discs, Radiator

FIRE EXTINGUISHERS—See Extinguishers, Garage Fire; also Extinguishers, Automobile Fire

FIRE POTS—See Furnaces, Soldering

FIRE TUBE BOILERS—See Boilers

FIRST AID CABINETS—See Cases, Medical Emergency

FIRST AID CASES—See Cases, Medical Emergency

FIRST AID KITS—See Cases, Medical Emergency

FITTINGS, Car Lowering, for Fords

Craig-Hunt—See Speedway Engineering Co.

Domelco—See Dominick & Co.

Dominick & Co., Wm., 2220 Indiana Ave., Chicago, Ill. "Domelco."

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.

Ford Speed-Power Equipment Mfrs., 250 W. 54th St., New York, N. Y.

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt."
(See page 409.)

FITTINGS, COMPRESSION—See Unions, Tubing

FITTINGS, CURTAIN OPENING—See Openers, Curtain

FITTINGS, Pipe

(For Tubing or Draining Fittings—See Tubing Unions.)

Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.

Commonwealth Brass Corp., Detroit, Mich. (See page 325.)

Crane Co., 884 S. Michigan Ave., Chicago, Ill.

Dalton-Ingersoll Mfg. Co., 171-75 High St., Boston, Mass.

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Kelly & Jones Co., Greensburg, Pa.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

McDonald Mfg. Co., A. Y., 12th & Pine Sts., Dubuque, Ia.

McNab & Harlin Mfg. Co., 55 John St., New York, N. Y.

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., Detroit, Mich. (See page 263.)

Pittsburg Valve & Fittings Co., Barberton, O.

Powhatan Brass & Iron Works, Ransom, W. Va.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 203.)

Ware Coupling & Nipple Co., Ware, Mass.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

FITTINGS, SOLDERLESS—See Unions, Tubing

FITTINGS, TUBING—See Unions, Tubing

FITTINGS, UNDERSLUNG FOR FORDS—See Fittings, Car Lowering

FITTINGS and FIXTURES, Top

(See also Bows, Top; also Fasteners, Curtain; also Irons, Slat; also Irons, Top; also Rasts, Bow; also Separators, Bow; also Scoops, Bow; also Straps, Top)

Amesbury Brass & Foundry Co., Amesbury, Mass.

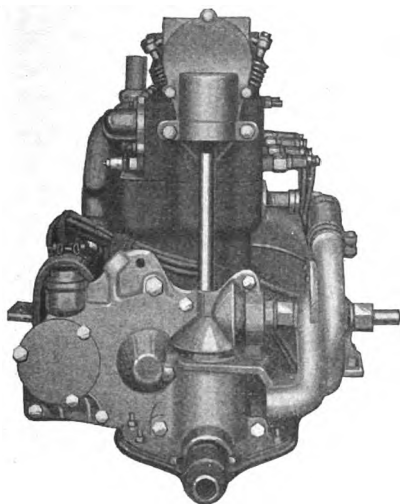
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

English & Merckel Co., New Haven, Conn. (See page 571.)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Everything is listed under the NOUN or principal word



CRAIG-HUNT HEADS

HOLLOW CRANKSHAFTS
SPEEDWAY BODIES
UNDERSLUNG PARTS

SPECIAL RATIO RACING GEARS
RACING PISTONS
SPECIAL RACING SPARK PLUGS
OIL AND WATER PUMPS

HIGH TENSION MAGNETOS
LIGHT WEIGHT CONNECTING RODS
COUNTERBALANCES FOR
CRANKSHAFTS

WIRE WHEELS STEERING GEARS

This is a Ford Motor, rebuilt with our Speed
Specialties, making it a high speed twin
valve—valve-in-head—racing motor.

"EVERYTHING FOR SPEED"

Write for Complete Catalogue

Speedway Engineering Company

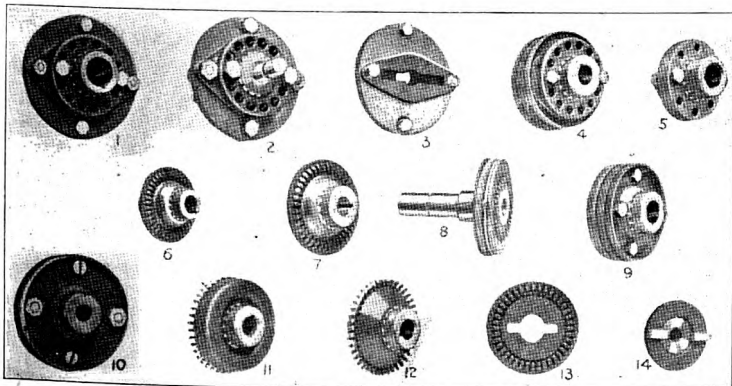
910 NORTH ILLINOIS STREET

INDIANAPOLIS, INDIANA, U. S. A.

CLIMAX COUPLINGS

Save money by placing your orders for these parts with us. Our patented process of manufacture out of stampings enables us to quote attractive prices and give you a lighter and better finished product.

We adapt our couplings to conform to your construction. Send us your blue print for quotation today.



Climax Motor Devices, Chagrin Falls, Ohio.

Please mention The Automobile Trade Directory

FITTINGS and FIXTURES, Top (Continued)

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O.
(See page 399.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 263.)

FIXTURES—See Dies, Jigs, Tools and Fixtures.

FIXTURES, Magneto Aligning and Testing for Fords

Hickley-Myers Co., Water St., Jackson, Mich.

FIXTURES, TOP—See Fittings and Fixtures, Top

FIXTURES, UNDERSLUNG FOR FORDS—See Fittings, Car Lowering

FLAG HOLDERS—See Holders, Flag, Pennant and Emblem

FLAGS, PENNANTS and EMBLEMS

(See also Ornaments, Badges; for Flag Holders—See Holders, Flag)

American Art Production Co., 58-60 Walton St., Brooklyn, N. Y.

Billwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Bloom Bros. Co., 422-30 First Ave., N., Minneapolis, Minn.

Freyberg, G. H. & E., 160 Fifth Ave., New York, N. Y.

Hunt & Co., E. J., Equity Bldg., Dayton, O.
Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)

Kosmos-Art Co., 120 E. Sixth St., Cincinnati, O.

Luxmoor Co., 114 E. 18th St., New York, N. Y.

Masari Co., H. W., 309 S. State St., Chicago, Ill.

Meller & Son, J. B., Dayton, O.

Orcutt & Co., J. C., 134 S. 13th St., Lincoln, Neb.

Staats & Co., E. G., Mt. Pleasant, Ia.

Thomson Mfg. Co.—See Hunt & Co.

FLANGE COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Flange

FLANGES, AIRCRAFT PROPELLER HUB—See Hubs, Aircraft Propeller

FLANGES, Pressed Steel Hub

(For Forged or Cast Flanges—See Forgings; also, Castings)

Bossert Corp., Utica, N. Y. (See page 387.)

Brewer-Tichenor Corp., Cortland, N. Y. (See page 573.)

Buffalo Pressed Steel Co., Buffalo, N. Y.

Crosby Co., Buffalo, N. Y. (See page 393.)

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 391.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
(See page 421.)

Kelsey Wheel Co., Detroit, Mich. (See page 1061.)

Konigsow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Powell Pressed Steel Co., Hubbard, O. (See page 393.)

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 389.)

Worcester Pressed Steel Co., Worcester, Mass. (See page 301.)

Worcester Stamped Metal Co., Worcester, Mass. (See page 1051.)

FLASH BOILERS—See Boilers

FLASHLIGHTS, ELECTRIC—See Lights, Electric Flash

FLAT BELTS—See Belting, Leather

FLEXIBLE CONDUIT—See Conduit, Flexible Car Wiring

FLEXIBLE CONTROL CABLE—See Cable, Flexible Control

FLEXIBLE COUPLINGS, MOTOR BOAT—See Couplings, Motor Boat Flexible

FLEXIBLE LEATHER MOULDING—See Moulding, Flexible Leather

FLEXIBLE METAL HOSE—See Tubing, Flexible Metallic; also Hose, Metal Lined

FLEXIBLE SHAFT COUPLINGS—See Couplings, Flexible Shaft

FLEXIBLE SHAFTS—See Shafting, Flexible

FLEXIBLE TUBING—See Tubing, Flexible

FLOATS, Cork

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Metal)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Forsyth Metal Goods Co., Elm St., East Aurora, N. Y.

Mundet & Son, L. S., 11th & Berry Sts., Brooklyn, N. Y. (See page 301.)

Paddock Cork Co., 1209-17 DeKalb Ave., Brooklyn, N. Y. (See page 301.)

Spanish-American Cork & Specialty Co. (Westport), Baltimore, Md.

FLOATS, Metal

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Cork)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Deposited Metal Products Co., 65 Bridge St., Newark, N. J.

Fitzgerald Mfg. Co., Torrington, Conn. (See page 439.)

Everything is listed under the NOUN or principal word

Sells on Sight



Every Ford and Chevrolet Owner Wants this Unique Gasoline Gauge and Filler



GASOMETER

for it enables the owner of a Ford or Chevrolet car to have his gasoline tank filled without the bother, trouble and waste of time of removing the seat cushion and getting out of the car. All that he has to do is to reach down, unscrew the filler cap and have the gas pumped into the tank without even leaving his seat.

Furthermore, each Gasometer has an accurate glass covered gasoline gauge which is always in plain view of the driver and enables him, at all times, to know the fraction of a gallon the amount of gasoline in his tank. This positively eliminates the danger of running out of gas in out-of-the-way places and therefore gives driver and passengers a feeling of comfort and safety that alone more than repays them for the slight cost of the Gasometer.

The special air-vent in the Gasometer allows rapid filling of the tank and positively prevents flooding while the tank is being filled. This is a feature which strongly appeals to every car owner in these days of high-cost gasoline.

The above illustration shows the location of the filler cap and gasoline gauge when the Gasometer is installed. Both are out of the way but readily accessible.

Made in Four Models

- (1) Ford or Chevrolet (490) round tank.
- (2) Ford late model oval tank.
- (3) Chevrolet left hand filling opening.
- (4) Ford Coupe oval tank.



A Genuine Boon For Every Ford and Chevrolet Owner

By filling a long-felt want the Gasometer is instantly appealing to every Ford and Chevrolet owner who sees it. The illustrations tell the story. This device can easily be attached by anyone in ten minutes—it is permanently held in place by a simple clamp and screw and does not rattle or shake loose.

The Gasometer is the only combined gasoline filler and gauge on the market. Dealers everywhere are saying that the Gasometer sells on sight. Write your jobber today, if he cannot supply write direct to the manufacturer. We want more dealers in every part of the country. Our trade discounts are liberal.

Go-ite Sales Company

KOKOMO, INDIANA
U. S. A.

Please mention The Automobile Trade Directory

FLOATS, Metal (Continued)

Foryath Metal Goods Co., Elm St., East Aurora, N. Y.
 Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Naugatuck Mfg. Co., Naugatuck, Conn.
 Weber Bros. Metal Works, 108-28 N. Jefferson St., Chicago, Ill.

FLOOR BOARD MATS FOR FORDS—See Mats, Floor Board

FLOOR BOARDS FOR FORDS—See Boards, Floor or Foot

FLOOR MATS—See Carpet, Coach; also Linoleum; also Mats, Rubber

FLOWER VASES—See Holders, Bouquet

FLUIDS, Priming

Sterno Corp., New York, N. Y.
 (See page 229.)

FLUX, BRAZING—See Compounds, Brazing

FLUX, Soldering

(For self fusing solder—See Solder, Bar and Wire)

Aero-Flux—See Reade Mfg. Co.
 Allen Co., L. B., 4548 N. Lincoln St., Chicago, Ill. "Alumni-Flux."
 Alumalux Co., E. Shelby St., Sidney, O. "Rajah."
 Alumi-Flux—See Allen Co.
 Aluminum Fix Co., 1964 E. 55th St., Cleveland, O.
 Benson Co., Alex. R., Hudson, N. Y. "Yagers."
 Blake Signal & Mfg. Co., Boston, Mass. (See page 413.)
 Brunner Chemical Works, 217 E. Third St., Cincinnati, O. "Queen."
 Burnley Battery & Mfg. Co., Clay St., North East, Pa.
 Callahan & Co., Geo., 218 Front St., New York, N. Y.
 Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester."
 (See page 413.)
 Corliss Supply & Mfg. Co., 1906 Olive St., St. Louis, Mo.
 Crescent—See McGill Mfg. Co.
 Crystalite—See Reade Mfg. Co.
 Dunton Co., M. W., 150-53 Niagara St., Providence, R. I. "Nokorode."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—Van Cleef Bros.
 Emenar Co., 44 E. 23d St., New York, N. Y. "Solderall."
 Eureka—See Grasselli Chemical Co.
 Falls Chemical Works, Cedar Falls, Iowa.
 Grasselli Chemical Co., Guardian Bldg., Cleveland, O. "Standard," "Eureka."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker."
 (See page 229.)
 Hess & Son, 2910 N. 16th St., Philadelphia, Pa. "Tinol."
 Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill. "Peerless."
 Incomparable—See Reade Mfg. Co.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 379.)

Kester—See Chicago Solder Co.
 McGill Mfg. Co., 259 Indiana Ave., Valparaiso, Ind. "Crescent," "Star."
 Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.

No-Compare—See Reschke Machine Works Co.
 Nokorode—See Dunton Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norweseco."
 (See page 277.)

Norwesco—See Northwestern Chemical Co.
 Peerless—See Illinois Smelting & Refining Co.

Queen—See Brunner Chemical Works.

Rajah—See Alumalux Co.

Reade Mfg. Co., 135 Hoboken St., Jersey City, N. J. "Incomparable," "Readina," "Aero-Flux," "Crystalite."

Readina—See Reade Mfg. Co.

Red Letter—See Ruby Chemical Co.

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "No Compare."

Rie-Nie—See Durkee-Atwood Co.

Ruby Chemical Co., 157 W. State St., Columbus, O. "Red Letter."

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y.

Schneider, Emil, 298-306 South St., Newark, N. J.

Solderall—See Emenar Co.

Standard—See Grasselli Chemical Co.

Star—See McGill Mfg. Co.

Tinol—See Hess & Son.

Transco—See Transmuted Metals Co.

Transmuted Metals Co., 3334 Chicago Ave., Chicago, Ill. "Transco."

Universal Fluxine Co., 604 S. Main St., Urbana, O.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wonder Worker—See Hall-Thompson Co.

Yagers—See Benson Co.

FLUX, WELDING—See Compounds, Welding

FLY WHEEL BALANCERS—See Ways, Balancing

FOLDING PAILS—See Buckets, Collapsible

FOOT ACCELERATORS—See Pedals, Special Accelerator

FOOT ACCELERATORS FOR FORDS—See Accelerators, Foot

FOOT BOARDS FOR FORDS—See Boards, Floor or Foot

FOOT PUMPS—See Pumps, Foot Tire

FOOT PUSHES—See Pushes, Foot

FOOT RAILS—See Rests, Foot

FOOT RAILS FOR FORDS—See Rails, Foot

FOOT RESTS—See Rests, Foot; also Hoses, Automobile

Everything is listed under the NOUN or principal word

Cut Soldering Time One-Half

The core of acid flux does the trick. As the Solder melts off, the flux flows on the job in just the right quantity to insure a perfect bond. Garages and manufacturers are saving one-half the time formerly required for soldering by using

Kester Acid-Core Wire Solder

In one-pound coils, in cartons, and in one, five, and ten pound spools. Also manufacturers of Kester Rosin-Core Wire Solder for delicate electrical jobs.

CHICAGO SOLDER CO.
4201 Wrightwood Ave., Chicago

Direct Factory Representatives:

Louis J. Ziesel Co., The Faucette-Huston
216 Market Street, Co.,
San Francisco, Cal. Chattanooga, Tenn.

Self-Fluxing Solder

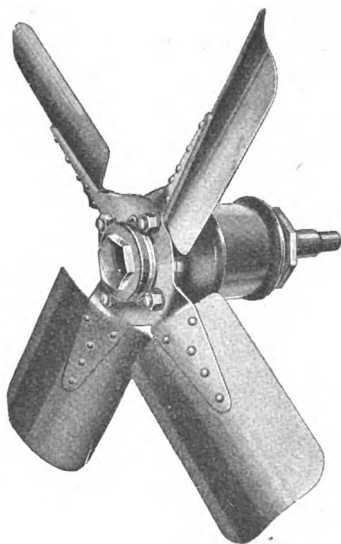


**BLAKE INSULATED
STAPLES**

FOR WIRING
IGNITION, LIGHTING and
STARTING CIRCUITS

Write for Samples
Blake Signal & Mfg. Co.
Boston, Mass.

Hy Duty Fans



Designs for all standard motors and installations.

Passenger Cars, Trucks or Tractors.

Our Engineers, experts on cooling problems, are at your service for correct design of cooling fans to insure maximum efficiency under specific conditions.

Deliveries as specified.

Automotive Parts Co.
Massachusetts Avenue at Fan St.
INDIANAPOLIS U. S. A.

Please mention The Automobile Trade Directory

FOOT SCRAPERS—See Scrapers, Foot

FOOTMAN LOOPS—See Loops, Brass
Snap and Strap

FORCING PRESSES—See Presses, Arbor

FORE CARS, MOTORCYCLE—See Cars,
Motorcycle, Side and Fore

FORE-DOOR VENTILATORS—See Venti-
lators, Limousine and Fore-Door

FORGINGS, Drop

Accessory Forgings Co., 6438 Orleans St., De-
troit, Mich.

Allegheny Forging Co., Keenan Bldg., Pitts-
burgh, Pa.

Allen & Co., S. L., No. Penn Junction, Phila-
delphia, Pa.

American Forge & Machine Co., 1850
Barth Ave., Canton, O. (See page 459.)

American Forging & Socket Co., Pontiac, Mich.

American Forgings Co., 2700-98 N. 24th St.,
Birmingham, Ala.

Atlas Drop Forge Co., 208 W. Mt. Hope Ave.,
Lansing, Mich.

Atwater Mfg. Co., Plantsville, Conn.

Auto Products Co., Station H., Cincin-
nati, O. (See page 159.)

Baker Gun & Forging Co., Batavia, N. Y.
(See page 605.)

Barnett Drop Forging Co., Ward Ave., East-
hampton, Mass.

Bavler, Nelson, Cobalt, Conn.

Bearings Co. of America, Lancaster, Pa.
(See page 133.)

Belden Machine Co., Whalley Ave. & Tryon
St., New Haven, Conn.

Benton Harbor Malleable Foundry Co., Ben-
ton Harbor, Mich.

Bethlehem Steel Co., Third & Poplar Sts.,
South Bethlehem, Pa.

Billings & Spencer Co., Laurel & Park Sts.,
Hartford, Conn.

Blakeslee Forging Co., Plantsville, Conn.

Bonney Forge & Tool Works, Allentown, Pa.

Brennan Co., John, Detroit, Mich.
(See page 947.)

Brewer-Tichenor Corp., Cortland, N. Y.
(See page 573.)

Brill Co., J. G., 62d St. & Woodland Ave.,
Philadelphia, Pa.

Buffalo Drop Forge Co., 58-59 Carroll St.,
Buffalo, N. Y.

Canton Drop Forging & Mfg. Co., Can-
ton, O. (See page 417.)

Cape Ann Tool Co., 150 Granite St., Pigeon
Cove, Mass.

Capitol—See Washington Steel & Ordnance Co.

Central Service Corp., 1607 Merchants
Bank Bldg., Indianapolis, Ind. (Sales
Representatives.) (See page 335.)

Champion Machine & Forging Co., 3695
E. 78th St., Cleveland, O.
(See page 420.)

Cheney Hammer Corp., H., Little Falls, N. Y.

Chicago Standard Parts Co., 39 W. Adams
St., Chicago, Ill. (Distributors.)
(See page 909.)

Christe-Kline Forge Co., 2737-39 Gurlin St.,
Detroit, Mich.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Au-
burn, N. Y.

Cleveland City Forge & Iron Co., Hamilton &
E. 45th Sts., Cleveland, O.

Cleveland Drop Forge Co., 3800 Superior
Ave., Cleveland, O. (See page 427.)

Cleveland Hardware Co., 4500 Hamilton Ave.,
Cleveland, O.

Columbus Bolt Works Co., Columbus, O.
(See page 147.)

Columbus Forge & Iron Co., Colum-
bus, O. (See page 417.)

Consolidated Mfg. Co., Toledo, O.

Crescent Forgings Co., Oakmont, Pa.

Crucible Steel Forge Co., Cleveland, O.

Davis Sewing Machine Co., Linden & Davis
Aves., Dayton, O.

Dean Forging Co., 1835 E. Jackson St., Mun-
cie, Ind.

Detroit Forging Co., 284 Mt. Elliott Ave., De-
troit, Mich.

Drop Forging Co. of New York, 397 West Side
Ave., Jersey City, N. J.

Duff Mfg. Co., Pittsburgh, Pa.
(See page opposite Inside Back Cover.)

Dunbar Drop Forge Co., 2506 W. 21st St.,
Chicago, Ill.

E. S. F.—See Electric Steel & Forge Co.

Eccles Co., Richard, 1-7 S. Division St., Au-
burn, N. Y.

Electric Steel & Forge Co., 6600 Grant Ave.,
Cleveland, O. "E. S. F."

Electro Steel Co., Pittsburgh, Pa.

Endicott Forging & Mfg. Co., Endicott, N. Y.

Eureka Co., North East, Pa.

Federal Drop Forge Co., 2200 S. Washington
Ave., Lansing, Mich.

Federal Equipment & Supply Co., 298 Broad-
way, New York, N. Y.

Federal Signal Co., Albany, N. Y.

Forge Products Corp., 901 Green St., Ann
Arbor, Mich.

Frost Gear & Forge Co., Jackson, Mich.
(See page 417.)

Fruin Drop Forge Co., 343-55 Root St. Chi-
cago, Ill.

Fulton Machine & Forging Co., Canal Ful-
ton, O.

General Drop Forge Co., Buffalo, N. Y.
(See page 417.)

General Railway Signal Co., Rochester, N. Y.

General Steel Co., Public Service Bldg., Mil-
waukee, Wis.

Globe Malleable Iron & Steel Co., 101 Green-
way Ave., Syracuse, N. Y.

Grant-Hammond Corp., New Haven, Conn.

Great Lakes Forge Co., 14 E. Jackson
Blvd., Chicago, Ill. "Kleenkut."
(See page 415.)

Harley Co., Page Blvd., Springfield, Mass.
(See pages 205 and 415.)

Harvey Spring & Forging Co., 106 A 17th
St., Racine, Wis. (See page 929.)

Henry & Allen, 2-38 Wadsworth St., Auburn,
N. Y.

Herbrand Co., 109-25 E. State St., Fremont, O.

Imperial Drop Forge Co., 610 S. Harding St.,
Indianapolis, Ind.

Indiana Mould & Machine Works, 1015 S.
Council St., Muncie, Ind.

Indianapolis Drop Forging Co., 1300 Madison
Ave., Indianapolis, Ind.

Infuso—See Steel Improvement & Forge Co.

Ingalls-Shepard Forging Co., 147th St. &
Page Ave., Harvey, Ill.

Interstate Drop Forge Co., 27th & Lake Sts.,
Milwaukee, Wis.

Jefferson Forge Products Co., Detroit,
Mich. (See page 523.)

Ketler-Elliott Co., 3153 S. California Ave.,
Chicago, Ill.

Keystone Drop Forge Works, Easton, Pa.

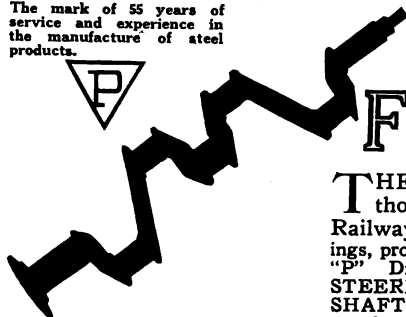
Keystone Forging Co., Duke & Front Sts.,
Northumberland, Pa.

Kilborn & Bishop Co., Chapel & Lloyd Sts.,
New Haven, Conn.

Everything is listed under the NOUN or principal word

POLLAK

The mark of 55 years of service and experience in the manufacture of steel products.



DROP FORGINGS

THE same organization that produces thousands of heavy Marine Forgings, Railway Forgings and Industrial Forgings, produces the smooth, true to size Triangle "P" Drop Forgings, CRANK SHAFTS, STEERING KNUCKLES, AXLES, CAM SHAFTS, etc., which are being used on both popular and higher priced motor cars and trucks.

THE POLLAK STEEL COMPANY

General Offices, 71st & Millcreek
Carthage, Cincinnati, O., U. S. A.

Works: Cincinnati
Marion, O., Chicago

General Sales and Foreign Offices
Equitable Bldg., New York City

KLEENKUT

DROP FORGINGS

—FOR THE BUYER WHO CARES!

KLEENKUT DROP FORGINGS are manufactured particularly for that type of buyer who seeks to serve the ultimate user of his product to the best of his ability.

GREAT LAKES FORGE CO.

14 E. Jackson Blvd., Chicago
80 Washington Blvd., Detroit
FACTORY AT CHICAGO

The HARLEY COMPANY

Office and Works—Page Boulevard

SPRINGFIELD · MASSACHUSETTS · U. S. A.

Founders and Manufacturers of
Aluminum, Bronze, Brass,
Copper and Composition
Castings

DROP FORGERS

Manufacturers of

CASKET HARDWARE

"Where Quality Is More Than a Word"

Please mention The Automobile Trade Directory

FORGINGS, Drop (Continued)

Kleenkut—See Great Lakes Forge Co.
 Kilinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
 Kraemer & Co., Newark, N. J. (See page 1001.)
 Kropp Forge Co., 242 S. 53rd St., Cicero, Ill.
 Ladish Drop Forge Co., Caduhy, Wis. (See page 537.)
 Lakeside Forge Co., Erie, Pa. (See page 1007.)
 Lansing Forge Co., Logan & Albert Sts., Lansing, Mich.
 Larson, Chas. E., 111 N. Desplaines St., Chicago, Ill.
 Lehigh Engineering Co., Royersford, Pa.
 Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
 McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.
 Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.
 Melling Forging Co., 501 North St., Lansing, Mich.
 Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
 Michigan Drop Forge Co., S. Saginaw St., Pontiac, Mich.
 Milwaukee Forge & Machine Co., Milwaukee, Wis. (See page 433.)
 Moline Forging & Mfg. Co., 42d St. & Fourth Ave., Moline, Ill.
 Moore Drop Forging Co., 336 Birnie Ave., Springfield, Mass.
 Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
 National Forge & Tool Co., Irvine, Pa.
 National Lock Washer Co., 40 Hermon St., Newark, N. J.
 New England Forge Co., 9 Plymouth St., Worcester, Mass.
 Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
 O. K. Tool Holder Co., Shelton, Conn.
 Octigan Drop Forge Co., 2500 Lowe Ave., Chicago, Ill.
 Obenberger Forge Co., John, West Allis, Wis.
 Ohio Forge Co., Cleveland, O. (See page 1009.)
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Owensboro Forging Co., W. Main St., Owensboro, Ky.
 Page-Storms Drop Forge Co., Chicopee, Mass.
 Pan Motor Co., St. Cloud, Minn.
 Park Drop Forge Co., Cleveland, O. (See page 319.)
 Pittsburgh Knife & Forge Co., Pittsburgh, Pa.
 Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 415.)
 Portland Forge & Foundry Co., Portland, Ind.
 Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.
 Queen City Forging Co., Tennyson & Dumont Sts., Cincinnati, O.
 Revere Drop Forge Co., 164 Broadway, Revere, Mass.
 Richmond Forging Corp., Richmond, Va.
 Rivetless Chain & Engineering Co., Avon, Pa.
 Rockford Drop Forge Co., Rockford, Ill. (See page 429.)
 Savage Arms Corp., Sharon, Pa.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Schuykill Drop Forge Co., Luzerne & Third Sts., Philadelphia, Pa.
 Scranton Forging Co., Scranton, Pa.

Smith Corp., A. O., Milwaukee, Wis. (See page 903.)
 Smith & Co., H. D., Plantville, Conn.
 Smith & Hemenway, 130 Colt St., Irvington, N. J.
 Spang & Co., Butler, Pa.
 Spicer Mfg. Corp., South Plainfield, N. J. (See page 549.)
 Standard Equipment Co., Lorain Ave., & W. 100th St., Cleveland, O.
 Standard Forgings Co., Railway Exchange Bldg., Chicago, Ill.
 Standard Parts Co., Cleveland, O. (See page 283.)
 Steel Forgings Co., Brotherton Rd., Cincinnati, O.
 Steel Improvement & Forge Co., 5002 Windsor Ave., Cleveland, O. "Infuso."
 Storms Drop Forging Co. (E. Springfield), Springfield, Mass.
 Strieby & Foote Co., 301 Ogden St., Newark, N. J.
 Sundberg Co., 1024 W. Kinzie St., Chicago, Ill.
 Thompson Drop Forge Co., Plantsville, Conn.
 Tlaga Steel & Iron Co., 52nd St. & Grays Ferry Ave., Philadelphia, Pa.
 Transue & Williams Steel Forging Corp., Alliance, O. (See page 885.)
 Twin City Forge & Foundry Co., Stillwater, Minn.
 Union Drop Forge Co., 358 W. Grand Ave., Chicago, Ill.
 Union Forging Co., Union, N. Y. (See page 253.)
 Union Switch & Signal Co., Swissvale, Pa.
 United States Chain & Forging Co., Thompson Ave., Pittsburgh, Pa.
 Universal Machine Co., Bowling Green, O.
 Washington Steel & Ordnance Co., Washington, D. C. "Capitol."
 West & Dennett Co., 14 E. Jackson Blvd., Chicago, Ill.
 Western Drop Forge Co., Marion, Ind.
 Western Malleable Steel Co., 1250 Jefferson Ave., W., Detroit, Mich.
 Western Tool & Forge Co., Brackenridge, Pa.
 Wharton, Jr., & Co., Wm., Easton, Pa.
 Whelan Drop Forge Co., 27th St. & 37th Ave., S., Minneapolis, Minn.
 Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.
 Wilcox Mfg. Co., D., Mechanicsburg, Pa.
 Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. (See page 1073.)
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wyman-Gordon, Worcester, Mass. (See Back Bone.)

FORMING LATHES—See Lathes, Forming

FORMING MACHINES—See Machines, Louvre, Forming; also Machines, Hood
 Hinge Forming

FORMING TOOLS—See Tools, Wire Terminal Forming

FOUNDRY SUPPLIES—See Supplies, Foundry.

FRAME EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

FRAME LINING—See Lining, Body or Frame

FRAME PADDING—See Lining, Body or Frame

Everything is listed under the NOUN or principal word

Special Drop Forgings in Quantities Chrome Nickel and all Special Steels

OIL TREATING AND ANNEALING

THE CANTON DROP FORGING AND MANUFACTURING CO.
CANTON, OHIO, U. S. A.

FROST GEAR & FORGE CO. JACKSON, MICH. GEARS AND DROP FORGINGS IN QUANTITY

DROP FORGINGS

The Columbus Forge & Iron Co.
Columbus, Ohio

GENERAL

SPECIAL DROP FORGINGS
OF ALL KINDS TO ORDER

SEND US PRINTS
OR MODELS
FOR PRICES

DROP

FORGE

BUFFALO, N.Y.

CO.

Please mention The Automobile Trade Directory

FRAMES, Hack Saw*(For Hack Saw Blades—See Blades, Hack Saw)*

A. A. A.—See Atkins & Co.
 Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A. A. A."
 Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless."
 Buffum Tool Co., Louisiana, Mo.
 (See page 395.)
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Consolidated Tool Works, 261 Broadway, New York, N. Y. "Pilot."
 Crown—See Union Hardware Co.
 Diamond Saw & Stamping Works, 257-61 Seventh St., Buffalo, N. Y. "Sterling."
 Dikeman Mfg. Co., Marwin St., Norwalk, Conn.
 Disston & Sons, Henry, (Tacony), Philadelphia, Pa.
 Eagle—See Union Hardware Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Griffin Co., G. W., Franklin, N. H.
 Jennings & Co., C. E., 71-73 Murray St., New York, N. Y.
 Langelier Mfg. Co., 67 Clifford St., Providence, R. I.
 Master Grip—See Thompson & Son Co.
 Matchless—See Bridgeport Hardware Mfg. Corp.
 Milford—See Thompson & Son Co.
 Millers Falls Co., Millers Falls, Mass. "Star."
 Napier Saw Works, Myrick Bldg., Springfield, Mass.
 Pilot—See Consolidated Tool Works.
 Red Devil—See Smith & Hemenway.
 S. & I. Co., 55-57 Governor St., Springfield, Mass.
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Star—See Millers Falls Co.
 Starrett Co., L. S., Athol, Mass.
 Sterling—See Diamond Saw & Stamping Works.
 Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford," "Master Grip."
 Union Hardware Co., Torrington, Conn. "Crown," "Eagle."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Utility—See West Haven Mfg. Co.
 Victor Saw Works, 1 Rowland Ave., Springfield, Mass.
 West Haven Mfg. Co., 23 Elm St. (West Haven), New Haven, Conn. "Utility."

FRAMES, Pressed Steel

Detroit Pressed Steel Co., Detroit, Mich. "Presteel." (See page 1053.)
 Elyria Steel Products Co., Elyria, O.
 Forsyth Bros. Co., Harvey, Ill.
 (See page 1055.)
 Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
 (See page 421.)
 Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
 Parish Mfg. Co., Reading, Pa.
 (See page 419.)
 Parish & Bingham Corporation, Cleveland, O.
 Presteel—See Detroit Pressed Steel Co.
 Savage Arms Corp., Sharon, Pa.
 Sharon Pressed Steel Co., Sharon, Pa.
 Slick-Knox Steel Co., Sharon, Pa.
 Smith Corp., A. O., Milwaukee, Wis.
 (See page 903.)

FRAMES, WOOD CUSHION—See Parts, Wood**FRICTION CLUTCH TRACTOR PULLEYS**
—See Pulleys, Tractor Clutch**FRICTION CLUTCHES—See Clutches, Friction****FRICTION DISCS—See Frictions, Fibre****FRICTION LEATHER—See Leather, Friction****FRICTIONS, Fibre***(For use in Friction Transmission)*

Divine Bros. Co., 203 Whitesboro St., Utica, N. Y.
 Rockwood Mfg. Co., 1801 English Ave., Indianapolis, Ind.

FRONT WHEEL BEARINGS FOR FORDS
—See Bearings, Front Wheel**FRONT WHEEL SPINDLES—See Spindles, Special Front Wheel for Fords****FUEL ECONOMIZERS—See Mixers, Economizers or Agitators, Fuel****FUEL LEVEL INDICATORS—See Gages, Gasoline Tank****FUEL MIXERS—See Mixers, Economizers or Agitators; also Vaporizers****FUEL PUMPS—See Pumps, Airplane Fuel****FUEL RESERVE COCKS—See Valves, Two Way Tank****FUEL RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply****FUEL SAVERS—See Mixers, Economizers or Agitators****FUEL STRAINERS—See Funnels, Gasoline; also Strainers, Gasoline****FUNNELS and MEASURES, Metal***(For Garage use for Gasoline or Oil)*

All-in-One—See Brookins Mfg. Co.
 Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
 Beacon—See Mooers-Wright Co.
 Best, R. L., Bismarck, N. Dak.
 Brookins Mfg. Co., Dayton, O. "All-in-One."
 Brown Stamping Co., Toledo, O.
 Central Stamping Co., 172-74 Fulton St., New York, N. Y. "Furitan."
 Dickson, J. M., 310 E. Hudson Terminal, New York, N. Y.
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. "Saval," "Kompact," "Flexo." (See page 421.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Swing Spout."

Everything is listed under the NOUN or principal word

The Birthplace of the **HEAT TREATED AUTOMOBILE FRAME**



The Parish Factory at Reading, Pa., will go down in automobile history as the birthplace of heat-treated automobile frames.

When automobiles were first introduced, comparatively little attention was paid to the quality of the frame, for there were many other things which were deemed of greater importance, hence the frame received but little consideration.

When we entered the field, we found that substantially all automobile frames were made of low-grade steel. Steel lacking in the qualities essential to safety and lasting service. We found that bulk took the place of strength and there was no warrant against accidents due to defects developed in the process of manufacture.

Seeing these conditions existing, here we found our opportunity to give to the motor world a better frame with greater lasting qualities and the high degree of safety.

After exhaustive experiments, we found that a particular grade of Chrome Steel, made according to specifications (original with us), combined, to a greater degree than any other steel, all the qualities desirable for automobile frames.

It has also been our belief that it is folly to risk an accident for the sake of saving a few dollars in raw material, so we adopted this steel; a decision we have never had cause to regret.

Having secured what we believed to be the best existing steel for automobile frames, we proceeded to the subject of treatment.

We discovered that if we hardened and tempered precisely as you would temper a cutting tool the metal became homogeneous throughout and all weakness at the point of bending disappeared, hence there were no weak points in the frame. The above is the story of Parish Chrome Steel Heat-Treated Frames. Since we originated and started the heat-treating of automobile frames, we have been imitated and copied by others, but the distinction of being the first has kept our heat-treating process always a step in advance and has made the name "Parish Heat-Treated Frames" stand for the last word in the science of automobile frame construction.

Parish
READING - DETROIT
FRAMES

Please mention The Automobile Trade Directory

FUNNELS and MEASURES, Metal (Continued)

Entrop Filter Co., Amboy, Ill.
 Flexo—See Dover Stamping & Mfg. Co.
 Grooten Pump Co., 171 Middle Ave., Aurora, Ill.
 Hoaglin Mfg. Co., F. L., 300 N. Main St., Waupaca, Wis. "Nospil."
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kompact—See Dover Stamping & Mfg. Co.
 Kraft, A. C., 333-35 W. Lake St., Chicago, Ill.
 Moers-Wright Co., 1400 Broadway, New York, N. Y. "Beacon." (See page 187.)
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y. "Nesco."
 National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa.
 Nesco—See National Enameling & Stamping Co.
 No-Shammy Products Co., 5710 Hough Ave., Cleveland, O.
 Nospil—See Hoaglin Mfg. Co.
 Parbee Mfg. Co., 116 N. Third St., Hannibal, Mo.
 Puritan—See Central Stamping Co.
 Puritan—See Sexton Can Co.
 Seval—See Dover Stamping & Mfg. Co.
 Schuyler Mfg. Co., W. S., 607 W. Main St., Savannah, Mo.
 Sexton Can Co., 123 Broad St., Boston, Mass. "Puritan."
 Swing Spout—See Edelmann & Co.
 Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

FUR BOOTS—See Boots, Motorists'

FUR COATS—See Clothing, Motorists'

FUR GLOVES—See Gloves, Motorists'

FURNACES, Annealing and Case Hardening

American Gas Furnace Co., Elizabeth, N. J. (See page 423.)
 Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
 Bellevue Furnace Co., 2971 Bellevue Ave., Detroit, Mich.
 Best, W. N., 11 Broadway, New York, N. Y.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Buckeye—See Macleod Co.
 Buzzer—See Hones, Charles A.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Gantt—See Witteman Co.
 Gilbert & Barker Mfg. Co., Springfield, Mass. (See page 939.)
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hones, Charles A., Noble & Franklin Sts., Brooklyn, N. Y. "Buzzer."
 Johnson Gas Appliance Co., 520 E Ave., West Cedar Rapids, Ia.
 Lancaster Iron Works, 580 S. Prince St., Lancaster, Pa. "Mirco."
 Macleod Co., 2232 Bogen St., Cincinnati, O. "Buckeye."
 Mirco—See Lancaster Iron Works.
 Rockwell Co., W. S., 50 Church St., New York, N. Y.
 Scott, C. U., 1340 Second Ave., Davenport, Ia.
 Scott & Son, C. W., 1510 First Ave., Rock Island, Ill.
 Standard Fuel Engineering Co., 461-75 Baltimore Ave., W., Detroit, Mich.
 Stewart—See Chicago Flexible Shaft Co.
 Tate-Jones & Co., Empire Bldg., Pittsburgh, Pa.
 Walsner Mfg. Co., Rockford, Ill.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 923.)
 Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

FURNACES, Babbitt Melting

American Gas Furnace Co., Elizabeth, N. J. (See page 423.)
 Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
 Buzzer—See Hones, Charles A.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y. "Vesuvius."
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hones, Charles A., Noble & Franklin Sts., Brooklyn, N. Y. "Buzzer."
 Johnson Gas Appliance Co., 520 E Ave., West Cedar Rapids, Ia.
 Stewart—See Chicago Flexible Shaft Co.
 Vesuvius—See Davis Machine Tool Co.

FURNACES, Brass and Copper Melting

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Colt St., Irvington, N. J.
 Best, W. N., 11 Broadway, New York, N. Y.
 Booth Electric Furnace Co., 326 W. Madison St., Chicago, Ill.
 Brass Founders Supply Co., 357 Wilson Ave., Newark, N. J.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Fisher Co., Alfred, 803 W. Madison St., Chicago, Ill.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hawley Down Draft Furnace Co., Valley Ave. & Hellertown Rd., Easton, Pa.
 Johnson Gas Appliance Co., 520 E Ave., West Cedar Rapids, Ia.
 Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Kroeschell-Schwartz."
 Kroeschell-Schwartz—See Kroeschell Bros. Co.
 Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md. "Steele-Harvey."
 Rockwell Co., W. S., 50 Church St., New York, N. Y.
 Steele-Harvey—See Monarch Engineering & Mfg. Co.
 Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.
 Stewart—See Chicago Flexible Shaft Co.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 923.)
 Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

Everything is listed under the NOUN or principal word

NEW DOVER Flexo Combination Measure & Funnel HEAVILY COPPER PLATED

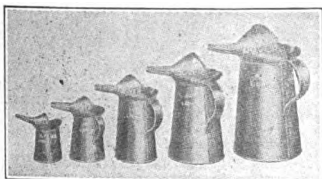


Made in 1, 2, and 4-Qt. Sizes
A measure and funnel combined with 8" detachable flexible spout. Easily reach any oil hole or tank without spilling

Send for Catalog

DOVER STAMPING & MFG. CO.

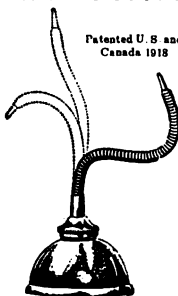
385 Putnam Ave., cor. Pleasant St., Cambridge, Mass., U.S.A.



If it hasn't the flexible cleaning device—it isn't an

"ALL-WAY"

Patented U. S. and
Canada 1918



THERE is only one genuine.
Press the spout downward—if the flexible cleaning device protrudes through the nozzle, it's an "ALL-WAY."

Made of the finest quality flexible steel tubing—it will outlast the ordinary oiler many years.

Order promptly from your jobber or direct from



FAMASCO DISTRIBUTING COMPANY

Sole U. S. Agents

694 Main Street

Buffalo, N. Y.

Pressed Steel Products

Chalmers, Cole, Jordan, Moline Plow, Paige, Stewart, White—in fact, some twenty manufacturers of motor cars and trucks use Hydraulic Pressed Steel Frames. The strength and dependability of these Frames are insured by Hydraulic's own steel and conscientious manufacture.

In addition to Frames, the Company manufactures Axle Housings, Brake Drums, Torque Arms, Running Boards, Step Hangers, Hub Flanges, Discs, Dust Shields, Aeroplane and Miscellaneous Stampings. A special department manufactures the Hydraulic Steel Bilged Barrel for the oil, chemical and paint industries.

THE HYDRAULIC PRESSED STEEL COMPANY

Of The Hydraulic Steel Company
CLEVELAND, OHIO

BRANCH SALES OFFICES:

New York
Singer Building

Chicago
Fisher Building

Detroit
Book Building

San Francisco
Hearst Building



HYDRAULIC

PRESSED STEEL COMPANY

Please mention The Automobile Trade Directory

FURNACES, CASE HARDENING—See Furnaces, Annealing

FURNACES, COPPER MELTING—See Furnaces, Brass and Copper Melting

FURNACES, GASOLINE—See Torches, Gasoline

FURNACES, HEAT TREATING—See Furnaces, Annealing and Case Hardening

FURNACES, Soldering

(See also Torches, Gasoline)

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)

Buzzer—See Hones, Charles A.

Hones, Charles A., Noble & Franklin Sts., Brooklyn, N. Y. "Buzzer."

Yost Mfg. Co., Meadville, Pa. (See page 1033.)

FUSE CLIPS—See Clips, Fuse

FUSE HANDLES—See Handles, Fuse

FUSELAGE WIRE PROTECTORS, AIR-PLANE—See Protectors, Airplane Rubber Fuselage Wire

FUSES, Electric

Buss—See Bussmann Mfg. Co.

Bussmann Mfg. Co., St. Louis, Mo. "Buss." (See page 423.)

Chicago Fuse Mfg. Co., Chicago, Ill. "Union." (See page 427.)

D. & W. Fuse Co. (Elmwood Sta.), Providence, R. I.

Daum, A. F., 1157 Hodgkiss St., Pittsburgh, N. S., Pa.

Economy Fuse & Mfg. Co., 323 W. Kinzie St., Chicago, Ill.

Electric Fuseguard Co., 60 Shipman St., Newark, N. J.

General Electric Co., Schenectady, N. Y. (See page 770.)

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "Noark."

Killark Electric Mfg. Co., St. Louis Mo. (See page 423.)

Monarch Re-Fillable Fuse Co., Jamestown, N. Y.

Noark—See Johns-Manville Co.

Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. "Tower." (See page 427.)

Tower—See Oettinger Corp.

Union—See Chicago Fuse Mfg. Co.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GAGE GLASS REFLECTORS—See Mirrors, Water Gage

GAGE GLASSES—See Glasses, Lubricator

GAGE LAMPS—See Lamps, Electric Dash

GAGES, AIR—See Gages, Steam; also Gages, Tire

GAGES, Aircraft Gasoline

Boston Auto Gage Co., 8 Waltham St., Boston, Mass. (See page 425.)

Brighton—See Rochester Mfg. Co.

Mercury—See Rochester Mfg. Co.

National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)

Rochester Mfg. Co., 39-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rocman."

Rocman—See Rochester Mfg. Co.

GAGES, ALIGNING—See Gages, Wheel Aligning

GAGES, Battery

(Pocket and Dash Board Battery Testers. For Standard Instruments—See Ammeters; For Battery Storage Testing Instruments—See Instruments, Storage Battery Testing)

Advance—See Firth & Co.

American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.

Batometer—See Fairbanks Co.

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Penacook, N. H., "Ultimate," "Utility.") (See pages 81 and 1007.)

Carleton Co., 170 Summer St., Boston, Mass.

Cemco—See Clark Electric Meter Co.

Connecticut Telephone & Electric Co., Meridan, Conn.

Dow Mfg. Co., 131 Adams St., Braintree, Mass.

Eclipse—See Firth & Co.

Eldredge Electric Mfg. Co.—See Firth & Co.

Eveready—See American Ever Ready Works.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo., "Batometer.") (See pages 619 to 622.)

Firth & Co., J., 18 Broadway, New York, N. Y. (Sole Distributors for Eldredge Electric Mfg. Co., Springfield, Mass. "Advance," "Eclipse.")

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Handy—See Roller-Smith Co.

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Hoyt Electrical Instrument Works—See Burton-Rogers Co.

Jewell Electrical Instrument Co., 1643 W Walnut St., Chicago, Ill.

Loewus, Edwin H., 304 W. 54th St., New York, N. Y.

Nagel Electric Co., W. G., Toledo, O. (See page 425.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)

P. V.—See Roller-Smith Co.

Pennsylvania Rubber & Supply Co., 1845-47 Euclid Ave., Cleveland, O. "Praco."

Praco—See Pennsylvania Rubber & Supply Co.

Readrite Meter Works, 137 N. Main St., Bluffton, O.

Roller-Smith Co., 9 Barclay St., New York, N. Y. "Handy." "P. V." (See page 425.)

Everything is listed under the NOUN or principal word



Reg. U. S. Pat. Off.

Write for prices, catalogue, or wall-chart.

Ask your jobber, or address

BUSSMANN MFG. CO., St. Louis, U. S. A.

OR

BANNER ACCESSORY MFG. CO. St. Louis

General Sales Representatives to the Auto Accessory Trade

AUTO TYPE

Made in strict accordance with the specifications of the Society of Automobile Engineers.

BUSS AUTO FUSES

are the only auto fuses approved by the Underwriters' Laboratories. They are approved in all sizes recommended by the S. A. E. (3A and 5A, 10, 20, and 30 amperes). Complete assortment at low cost in display cases that sell goods.



A GAS MACHINE FOR EVERY HEATING PROCESS

HEATING MACHINE No. 29



This machine is for continuous hardening and annealing.

For hardening ball-bearing, detachable saw teeth and for annealing brass shells or any other work not exceeding 2 1/4 inches in length.

HEATING MACHINE No. 51

For Coloring Iron and Steel Work



For tempering and coloring steel work "Carbonize" (or gun metal finish). This machine is practically an improved "Tumbling Barrel" heated with perfect uniformity; the temperature can be controlled by reference to thermometer.

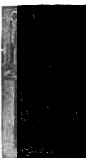
Made in various styles.

OVEN FURNACE No. 38

Oven Furnaces are designed to heat pieces of any desired dimension, uniformly to any degree of temperature required for annealing and hardening metal work.

For high-speed or tool steel.

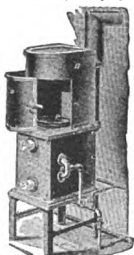
Made in various sizes.



CYANIDE FURNACE No. 1

This style of furnace is made for hardening steel work in cyanide of potassium, as cutters, dies, springs, rolls, etc.

Made in various sizes and styles.



Gas as Fuel

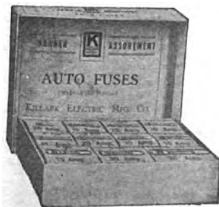
has many advantages over other fuels. For example: with gas you can control the heat within 5° F. and maintain a uniform temperature for annealing and hardening up to the heat required.

During the past 30 years we have acquired an experience in the utilization of gas in mechanical heating process that will help you solve your heating problems.

Tell us your problems and we will show you how to overcome them in the most efficient manner. Write us today.

AMERICAN GAS FURNACE COMPANY

Office and Works: ELIZABETH, N. J.



Banner Assortment

"Killark" Auto Fuses

Strong, accurate, dependable fuses for every make of car.

Our BANNER ASSORTMENT contains 100 of the best selling fuses, is packed in a cardboard box, and makes an attractive counter display.

Write for our Hat No. A 1, showing "Proper Killark Fuses for Every Car."



Killark Electric Mfg. Co.

St. Louis, Mo.

Please mention The Automobile Trade Directory

GAGES, Battery (Continued)

Sholder-Excel Mfg. Co., Clyde, O.
 Shontz Co., H. B., Dept C, 161 W. 64th St.,
 New York, N. Y. (Dealers.)
 (See page 177.)
 Standard Electric Mfg. Co., 126 South St.,
 Newark, N. J.
 Sterling Mfg. Co., 2845-53 Prospect Ave.,
 Cleveland, O. "Trescot."
 Thompson Battery Tester Co., Greensburg,
 Pa.
 Trescot—See Sterling Mfg. Co.
 Ultimate—See Burton-Rogers Co.
 Utility—See Burton-Rogers Co.
 Westinghouse Electric & Mfg. Co., 82
 Worthington St., Springfield, Mass.
 (See pages 926 and 927.)
 Weston Electrical Instrument Co., 16
 Weston Ave., Newark, N. J.
 (See page 81.)

GAGES, Boiler Water-Line

(For indicating height of water in steam boilers)

Ashton Valve Co., 161 First St. (Cambridge),
 Boston, Mass.
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co., (North
 Philadelphia), Philadelphia, Pa. "Genco."
 Reliable Water Gauge Co., 1618 Pine St., St.
 Louis, Mo.
 Schaeffer & Budenberg Mfg. Co., 338 Berry St.,
 Brooklyn, N. Y.
 Wiltbonco Mfg. Co., 28 Porter St. (Jamaica
 Plain), Boston, Mass.

GAGES, Centre

Athol Machine Co., Athol, Mass.
 Brown & Sharpe Mfg. Co., Promenade St.,
 Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Starrett Co., L. S., Athol, Mass.
 Wyke, J., South St., Wilmington, Mass.

GAGES, CIRCULATION — See Gages, Water Circulation**GAGES, COMPRESSION—See Gages, Cylinder Compression****GAGES, Cylinder**

Am-Pe-Co. Sales Co., Marshalltown, Iowa.
 (See page 487.)
 Ames Co., B. C., Ames St., Waltham, Mass.
 Federal Products Corp., 393 Harris Ave.,
 Providence, R. I. (See page 529.)

GAGES, Cylinder Compression

(For testing compression in gas engine cylinders)

Brown Co., 1071-73 Clinton St., Syracuse,
 N. Y.
 Casey-Hudson Co., 361 E. Ohio St., Chi-
 cago, Ill. (See pages 665 and 829.)
 Edelmann & Co., E., 2638 N. Crawford Ave.,
 Chicago, Ill.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chi-
 cago, Ill.
 Peterman & Co., 2721 N. Clark St., Chicago,
 Ill.

Pierce, Butler & Pierce (Valve & Gage Di-
 vision), 282 James St., Syracuse, N. Y.
 United States Gauge Co., 37 Liberty St.,
 New York, N. Y. (See page 433.)

GAGES, Depth

Athol Machine Co., Athol, Mass.
 Brown & Sharpe Mfg. Co., Promenade St.,
 Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Starrett Co., L. S., Athol, Mass.

GAGES, Drill and Wire

Blodgett Mfg. Co., 248 Penn St., Rochester,
 N. Y.
 Brown & Sharpe Mfg. Co., Promenade St.,
 Providence, R. I.
 Detroit Twist Drill Co., Detroit, Mich.
 (See page 777.)
 Morse Twist Drill & Machine Co., 163 Pleas-
 ant St., New Bedford, Mass.
 Peck, Stow & Wilcox Co., Southington, Conn.
 "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Pratt & Whitney Co., 111 Broadway,
 New York, N. Y. (See page 373.)
 Standard Tool Co., 6900-34 Central Ave.,
 Cleveland, O.
 Starrett Co., L. S., Athol, Mass.

GAGES, Gasoline Tank

(For indicating the amount of gasoline in fuel tanks)

Akron-Selle Co., High & Chestnut Sts., Akron,
 O. "Tasco."
 Ashton Valve Co., 161 First St. (Cambridge),
 Boston, Mass.
 Atlantic Motor & Supply Co., 63 Gorham St.,
 Boston, Mass.
 Boston Auto Gage Co., 8 Waltham St.,
 Boston, Mass. "Triumph," "Chal-
 lenge." (See page 425.)
 Brighton—See Rochester Mfg. Co.
 Challenge—See Boston Auto Gage Co.
 Champion Mfg. Co., 74th St. & Kimbark
 Ave., Chicago, Ill. "Safeguard."
 (See page 427.)
 Cole—See Stemco Engineering Co.
 Commonwealth Brass Corp., Detroit,
 Mich. (See page 325.)
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 171.)
 Dunn Motor Device Co., 528 Massachusetts
 Ave., Indianapolis, Ind.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Gasograph—See New Standard Adding Ma-
 chine Co.
 Gem Stamped Steel Co., 16 Beach St., Everett,
 Mass.
 Go-It Sales Co., Kokomo, Ind.
 (See page 411.)
 Imperial Fluid Gauge Co., Third St. & Rex
 Ave., S. E., Canton, O.
 Lockite Patch Co., 7850 Morrow St., Detroit,
 Mich.
 Mercury—See Rochester Mfg. Co.
 Nagel Electric Co., W. G., Toledo, O.
 (See page 425.)
 National Gauge & Equipment Co., La
 Crosse, Wis. (See page 425.)
 National Motor Supply Co., Painesville, O.
 New Standard Adding Machine Co., 3705
 Forest Park Blvd., St. Louis, Mo.

Everything is listed under the NOUN or principal word



OIL GAUGES

ISTRUMENTS that match. We are supplying Oil Pressure Gauges, Ammeters and Dash Thermometers all in identical cases. The instruments complete, including the dials, are all made in one plant.

Dependable instruments beautifully finished.

We also solicit inquiries for Gasoline Tank Gauges and Filler Caps.

Write nearest office for Catalog No. 24

Look for the INDIAN HEAD Trade Mark

**NATIONAL GAUGE
& EQUIPMENT CO.**
LACROSSE, WIS.

Kresge Bldg. 516 42ND ST. Railway Exchange
DETROIT NEW YORK CHICAGO



WHY A UNIVERSAL "P.V." AMMETER?

Because—It's the only dashboard Ammeter that is suitable for use on
ANY MAKE OF CAR
ANY MAKE OR TYPE OF SYSTEM
ANY VOLTAGE SYSTEM

Sold singly or in quantity.
Send for our attractive prices.

ROLLER-SMITH COMPANY
Electrical Instruments Meters and Circuit Breakers



Main Office: 9 Barclay St., New York
Chicago: Monadnock Block
Detroit: Majestic Bldg.
Other Offices in Principal Cities

Works: Bethlehem, Pa.
Cleveland: 7016 Euclid Ave.
Cleveland: 7016 Euclid Ave.

NAGEL



AMMETER

A Nagel ammeter on the dash of your car is an unerring sentinel to warn you of battery or generator trouble—and more, a distinguishing mark of quality. More than 2,000,000 motor cars are equipped with them.

THE W.G. NAGEL ELECTRIC CO.
TOLEDO, OHIO

"Triumph"

REG. U. S. PAT. OFF.

MAGNETIC GASOLINE AND OIL GAGES

**SPECIAL MODELS MADE
UP FOR ANY TANK ON
RECEIPT OF BLUEPRINT**

**BOSTON AUTO GAGE
COMPANY**

8 Waltham St., Boston, Mass.

Please mention The Automobile Trade Directory

GAGES, Gasoline Tank (Continued)

Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rooman."
 Rooman—See Rochester Mfg. Co.
 Safeguard—See Champion Mfg. Co.
 Stenoco Engineering Co., Second & Webb Sts., Dayton, O. "Cole."
 Tasco—See Akron-Selle Co.
 Thompson & Stubor, Rochester, N. Y.
 Triumph—See Boston Auto Gage Co.

GAGES, Gasoline Tank, for Fords

(For indicating the amount of gasoline in fuel tanks)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 77.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Baer-Glauber Co., 6523 Euclid Ave., Cleveland, O.
 Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "Challenge." (See page 425.)
 Brighton—See Rochester Mfg. Co.
 Buffalo—See O. K. Lock Co.
 Buffalo Gauge Co., 336 Hampshire St., Buffalo, N. Y.
 Challenge—See Boston Auto Gage Co.
 Dependo—See Roper & Co.
 Ever-Right Production Corp., 351-53 Jay St., Brooklyn, N. Y.
 Gas-O-Larm—See Locktite Patch Co.
 Gasograph—See New Standard Adding Machine Co.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Go-ite Sales Co., Kokomo, Ind. (See page 411.)
 Issaquah Garage, Issaquah, Wash.
 Locktite Patch Co., 1930 Marston Ave., Detroit, Mich. "Gas-O-Larm."
 M-B—See Zim Accessories.
 Mercury—See Rochester Mfg. Co.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 New Standard Adding Machine Co., 3705 Forest Park Blvd., St. Louis, Mo. "Gasograph."
 O. K. Lock Co., 264 Broadway, Buffalo, N. Y. "Buffalo."
 Ospeco—See Michigan Auto Products Co.
 Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rooman."
 Rooman—See Rochester Mfg. Co.
 Roper & Co., C. F., Hopedale, Mass. "Dependo."
 Standex, Inc., 341 E. Ohio St., Chicago, Ill.
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "M-B."

GAGES, Limit

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 915.)
 Lowry-Knise Tool Co., 241 W. Adams St., Syracuse, N. Y. "Syracuse."
 Nichols, W. H., Waltham, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.

Syracuse—See Lowry-Knise Tool Co.
 Taft-Peirce Mfg. Co., Woonsocket, R. I.

GAGES, Motorcycle Battery

Ammeccup—See Lake-Erb Mfg. Co.
 Lake-Erb Mfg. Co., 405 E. Fourth St., New York, N. Y. "Ammeccup." (See page 981.)

GAGES, Oil, for Fords

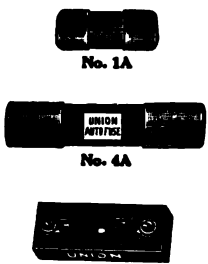
(For indicating the amount of oil in the crank case)

Akuret—See Wallace Motor Products Corp.
 American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Oilometer." (See page 77.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch." (See page 945.)
 Billinger Mfg. Co., Saranac, Mich.
 Bowen Products Corp., Auburn, N. Y. (See page 321.)
 Buffalo—See O. K. Lock Co.
 CB—See Cummings Bros.
 Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Cummings Bros., 901-03 E. Saginaw St., Flint, Mich. "CB."
 Edelmänn & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill.
 Henkelman Co., Chas. E., 2213-15 Pacific Ave., Atlantic City, N. J.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Huber Co., F. L., 221 N. Channing Ave., St. Louis, Mo.
 Ideal—See Worthington, A. P.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Lee Mfg. Co., 308 Ashley St., Ann Arbor, Mich. "Watch Dog."
 M-B—See Zim Accessories.
 Monarch—See Benford Auto Products, Inc.
 North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill.
 O. K. Lock Co., 264 Broadway, Buffalo, N. Y. "Buffalo."
 Oilometer—See American Automatic Devices Co.
 Thomas-Andrews Corp., Waukegan, Ill. (See page 951.)
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.
 Wallace Motor Products Corp., 120 Broadway, New York, N. Y. "Akuret." (See page 505.)
 Watch Dog—See Lee Mfg. Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Ideal."
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "M-B."

GAGES, Oil Pressure

Foxboro Co., Neponset Ave., Foxboro, Mass.

Everything is listed under the NOUN or principal word



No. 1A

No. 4A

"UNION" AUTO FUSE MATERIAL

Fuses for Every Known Make of Car—Write for Samples

Special Parts and Stampings

Let us quote prices

SEND BLUE PRINTS OR SAMPLES

CHICAGO FUSE MFG. CO.
CHICAGO NEW YORK

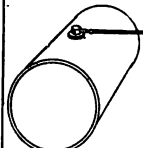


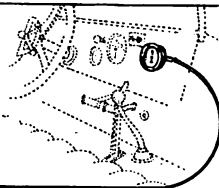
Fuse Box

The CHAMPION GASOLINE GAUGE

FOR THE INSTRUMENT BOARD

A practical Instrument directly before the eyes of the driver showing at all times the amount of gasoline in the tank. The SAFEGUARD of your peace of mind. You KNOW how much gasoline you have.





The Champion Manufacturing Co.
74th St. & Kimbark Ave.,
Chicago, Ill.

"TOWER" BRAND AUTOMOBILE FUSES

**STANDARD
OF
EXCELLENCE**





**F. W.
OETTINGER
CORPORATION**
25 Vanderbilt Ave.
NEW YORK
Sole Distributors

CARBON—ALLOY—TOOL STEEL

FORGINGS

THE CLEVELAND DROP FORGE COMPANY

3800 SUPERIOR AVENUE, CLEVELAND, OHIO

Please mention The Automobile Trade Directory

GAGES, Oil Pressure (Continued)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Lea, E. S., Trenton, N. J.
 National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)
 Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.
 Telometer Mfg. Co., 246-50 Main St., Binghamton, N. Y.
 United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 433.)
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.

GAGES, Plug and Ring

Ames Co., B. C., Ames St., Waltham, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 General Tool Co., 1760 Main St., Buffalo, N. Y.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 915.)
 Johansson, C. E., Poughkeepsie, N. Y. (Importers.)
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Nichols, W. H., Waltham, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.
 Taft-Peirce Mfg. Co., Woonsocket, R. I.
 West & Dodge Co. (Faniel Sta.), Boston, Mass.
 Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.

GAGES, PRESSURE—See Gages, Steam and Air; also Gages, Oil Pressure; also Gages, Tire Pressure

GAGES, PUMP—See Gages, Tire Pressure

GAGES, Radiator

(For indicating the water level)

Autometer Co., Annapolis, Md. "Beardmore."
 Beardmore—See Autometer Co.

GAGES, RING—See Gages, Plug and Ring

GAGES, Screw Pitch

Ames Co., B. C., Ames St., Waltham, Mass.
 Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
 Athol Machine Co., Athol, Mass.
 Blodgett Mfg. Co., 248 Penn St., Rochester, N. Y.
 Brown & Sharpe Mfg Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 General Tool Co., 1760 Main St., Buffalo, N. Y.
 Goodell-Pratt Co., Greenfield, Mass.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 915.)
 Henderson Co., Gulick, 145 W. 36th St., New York, N. Y.
 Nichols, W. H., Waltham, Mass.
 Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Sheffield Machine & Tool Co., Dayton, O.

Starrett Co., L. S. Athol, Mass.
 Union Tool Co., 48 E. River St., Orange, Mass.
 West & Dodge Co. (Faniel Sta.), Boston, Mass.

GAGES, Specific Gravity

(To be attached to Gasoline Pumps to show specific gravity of fuel sold)

Elwood Gravity Gauge Co., Elwood, Ind.

GAGES, Steam and Air

(Standard Pressure Gages)

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.
 Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 429.)
 Marsh & Co., Jas. P., 118-24 S. Clinton St., Chicago, Ill.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)
 Schaeffer & Budenberg Mfg. Co., 333 Berry St., Brooklyn, N. Y.
 United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 433.)

GAGES, Surface

Brown & Sharpe Mfg Co., Promenade St., Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Starrett Co., L. S., Athol, Mass.
 Wyke, J., South St., Wilmington, Mass.

GAGES, TANK—See Gages, Aircraft Gasoline; also Gages, Gasoline Tank; also Gages, Vacuum Tank

GAGES, TANK, FOR FORDS—See Gages, Gasoline Tank

GAGES, Tire Pressure

(For indicating pressure in tires)

Allen Auto Specialty Co., 18 W. 61st St., New York, N. Y. "Tyrometer." (See page 335.)
 American Sanitary Lock Co., 1072-80 E. East St., Indianapolis, Ind. "Pop-Or."
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
 Autoquip Mfg. Co., Rochester, N. Y. (See page 761.)
 Barnard Specialty Co., 3300 Maple Ave., Los Angeles, Cal.
 C&S—See Codman & Shurtleff.
 Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C&S."
 Econ-o-cap—See Greist Mfg. Co.
 Edelmann & Co., E., 2638 Crawford Ave., Chicago, Ill.
 Flometer—See Penberthy Injector Co.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Greist Mfg. Co., New Haven, Conn. "Econ-o-cap," "Test-o-Cap." (See page 323.)
 Hansen Mfg. Co., Cleveland, O. (See page 1025.)

Everything is listed under the NOUN or principal word



The Dearborn Equipment Co. manufacture a full line of garage equipment, specializing in machinery and tools for Ford Service Stations.

You are invited to send for further information regarding the Dearborn Line.

Dearborn Equipment Co.
Kalamazoo
Mich.

Improved Spring Oilers



**35c
each**

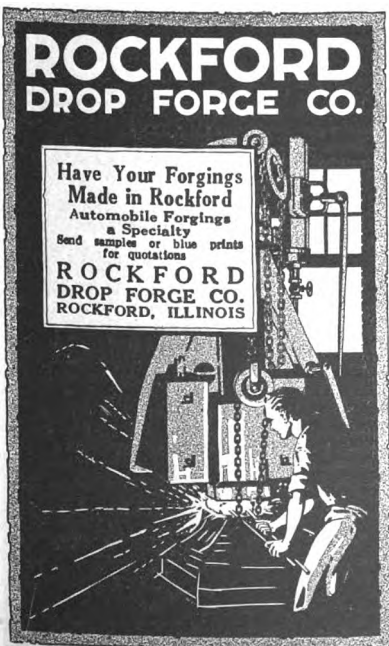
Our Improved Spring Oilers are a neat oiling device; prevent auto springs from breaking and squeaking. Made in all sizes and will fit all makes of cars. Jobbers and Dealers, write for our Spring Oiler catalogue; large sales and good discount.

IMPROVED GAUGE MFG. CO.
105 Canal St. Syracuse, N. Y.

ROCKFORD DROP FORCE CO.

Have Your Forgings
Made in Rockford
Automobile Forgings
a Specialty
Send samples or blue prints
for quotations

**ROCKFORD
DROP FORGE CO.**
ROCKFORD, ILLINOIS



CHAMPION



Forgings of any size exactly to specifications uniform in strength and quality. Send us your blue prints.

The Champion Machine & Forging Co.
3695 East 78th Street, Cleveland, Ohio
New York Office—30 Church Street
Philadelphia Office—Bourse Building
Detroit Office, 705 Ford Building

DROP FORGINGS

Please mention The Automobile Trade Directory

GAGES, Tire Pressure (Continued)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Pneu-Meter."
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 429.)
 Invincible—See United States Gauge Co.
 Kellom Mfg. Co., Rochester, N. Y. (See page 753.)
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 Mead Engineering Co., 1133 Broadway, New York, N. Y.
 National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)
 Pierce, Butler & Pierce (Valve & Gage Division), 232 James St., Syracuse, N. Y.
 Pneu-Meter—See Hill Pump Valve Co.
 Pop-Off—See American Sanitary Lock Co.
 Schrader's Son, A., Brooklyn, N. Y. (See page 506.)
 Test-O-Cap—See Greist Mfg. Co.
 Try Me Mfg. Co., Westfield, Mass.
 Twitchell Gauge Co., 1516 S. Wabash Ave., Chicago, Ill. (See page 431.)
 Tyrometer—See Allen Auto Specialty Co.
 United States Gauge Co., 37 Liberty St., New York, N. Y. "Invincible." (See page 433.)

GAGES, Vacuum Tank

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 527.)
 Jay Corp., Webb, 910 S. Michigan Ave., Chicago, Ill.
 Penberthy Injector Co., Detroit, Mich. "Flometer." (See page 561.)
 Vacuumer Sales Corp., Knoxville, Tenn.

GAGES, Water Circulation

(For indicating pressure in water cooling systems)

Ashton Valve Co., 181 First St. (Cambridge), Boston, Mass.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 429.)
 Schaeffer & Budenberg Mfg. Co., 335 Berry St., Brooklyn, N. Y.

GAGES, Wheel Aligning

(For indicating or testing the alignment of front wheels)

Duby, J. F., 11 River St. Mattapan, Mass. (See page 669.)
 Mechanical Utilities Corp., 5 N. La Salle St., Chicago, Ill.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

GAGES, WIRE—See Gages, Drill and Wire

GALVANIZING, Sherardizing and Rust-Proofing

American Tap Bush Co., 6404 Jefferson Ave., E., Detroit, Mich.
 American Tube & Stamping Co., Bridgeport, Conn.
 Buffalo Galvanizing & Tinning Works, 49-53 Jackson St., Buffalo, N. Y.
 Chain Products Co., 3924 Cooper Ave., Cleveland, O.

Cramp & Sons Ship & Engine Bldg. Co., William, Philadelphia, Pa. (See page 209.)

Dover Stamping & Mfg. Co., 335 Putnam Ave., Cambridge, Mass. (See page 421.)

Federal Sign Co., Albany, N. Y.
 Fore River Shipbuilding Corp., Quincy, Mass.
 Galvanizing Corp. of America, 244-52 Eagle St., Brooklyn, N. Y.

Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. (See page 935.)

Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

Grabler Mfg. Co., Cleveland, O.

Maforco—See Market Forge Co.

Malleable Iron Fittings Co., Bramford, Conn. (See page 247.)

Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.

Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Maforco."

Meaker Galvanizing Co., 1249 Fulton St., Chicago, Ill.

Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y. (See page 1027.)

National Galvanizing Co., 1918-26 Carroll Ave., Chicago, Ill.

New Haven Sherardizing Co., 868 Windsor St., Hartford, Conn.

Ohio Sherardizing Co., 1101 Power Ave., Cleveland, O.

Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.

Scott, C. U., 1340 Second Ave., Davenport, Ia.

Stanley Works, (Special Production Department), New Britain, Conn. (See page 491.)

U. S. Electro-Galvanizing Co., 275-84 Park Ave., Brooklyn, N. Y.

Wise Electro Sherardizing Co., 6320 E. Fort St., Detroit, Mich.

GAPS, Spark

(Auxiliary Spark Gaps, Intensifiers or Indicators)

All-Spark Ignition Co., 13 Water St., New York, N. Y.

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Visible." (See page 77.)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Willspark." (See page 371.)

Auto Spark Indicator Co., 250 Devonshire St., Boston, Mass.

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 919.)

Ben-Wat Corp., Jamesburg, N. J.

Bingham Perfected Spark Plugs, 324 Mulberry St., Rockford, Ill. (See page 723.)

Brosnan Co., 22½ E. Court St., Springfield, Mass.

Bunch & Co., Marshall, Mo. "Gottospark."

Chance Co., Centralia, Mo. "Sparklets."

Colby Co., G. E., 2-6 N. Eighth Ave., Maywood, Ill. "For-Do."

D-B-Q Mfg. Co., 307 Stratford Ave., Bridgeport, Conn.

Delco Mfg. Co., 414 Wainwright Blvd., St. Louis, Mo.

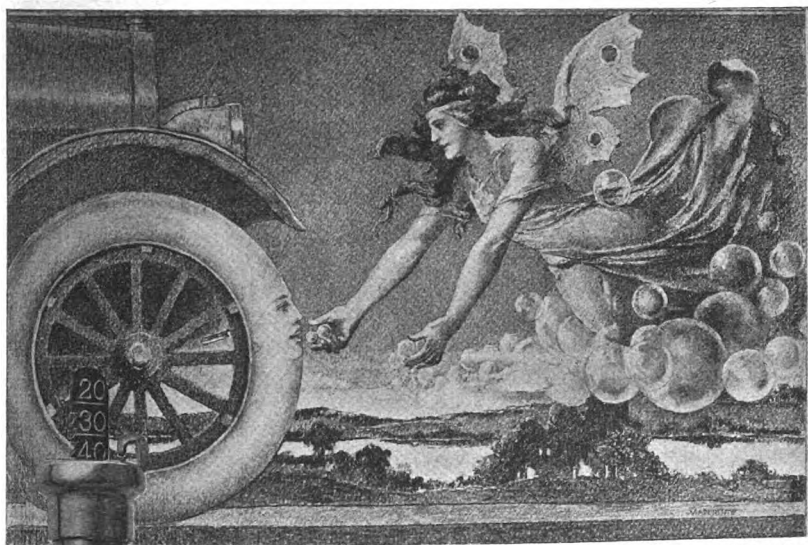
Durham Co., P. J., 244 W. 49th St., New York, N. Y.

Emo Laboratories, 2255 N. Illinois St., Indianapolis, Ind.

For-Do—See Colby Co.

Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.

Everything is listed under the NOUN or principal word



Copyright, 1921, Twitchell Gauge Co.

Feed Your Tires

the right amount of air and
keep them right by using

A TWITCHELL GAUGE

to make sure that they have the pressure that the Tire
Manufacturers prescribe.

Price \$1.50 in U. S. A.

Your dealer has them.

This is one of a series of ads now being run in consumer publications
to stimulate the sale of Twitchell gauges. When sending in your
order for your season's supply of Twitchells take into consideration
the effect of this advertising as well as the fact that there are a mil-
lion more automobiles in use this year than last.

The Twitchell Gauge Company

1516 So. Wabash Avenue

Chicago

Please mention The Automobile Trade Directory

GAPS, Spark (Continued)

Geoffroy—See General Machine Co.
 General Machine Co., 227 Eddy St., Providence, R. I. "Geoffroy."
 Gottospark—See Bunch & Co.
 Guaranty Motors Co., Cambridge, Mass. (See page 433.)
 H. E. C.—See Hercules Electric Corp.
 Harrington Co., O. C., 4133 Fillmore St., Chicago, Ill.
 Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."
 Hercules Electric Corp., 25 Blue Hill Ave., Roxbury, Mass. "H. E. C."
 Herz, 182 Locust Ave., New York, N. Y. "Oscillum."
 Instanto—See Jackson & Co.
 Jackson & Co., 189 N. Clark St., Chicago, Ill. "Instanto."
 Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.
 Meyer Auto Accessory Co., 787-71 20th St., Detroit, Mich.
 Modern Tool & Stamping Co., 311-17 E. Clinton St., Chicago, Ill.
 Motor Economy Co., Cincinnati, O. "Sure-Fire."
 Oscillum—See Herz.
 Pittsburgh Electric Specialties Co., 396 Broadway, New York, N. Y.
 Plug Test Co., 738 Broad St., Newark, N. J. "Simplex."
 Power Spark Intensifier Co., Watertown, S. Dak.
 Toronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
 Quincy & Schroeder, 256 W. 69th St., New York, N. Y. "Shurspare." (See page 981.)
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.
 Roese Mfg. Co., 827-33 W. Main St., Louisville, Ky. (See pages 125, 143, 307 and 983.)
 Rutledge Repair & Engr. Co., Uel Alvin, 1407 E. Tenth St., Charlotte, N. C.
 Scott Corp., 1534 W. Lake St., Chicago, Ill.
 Shurspare—See Quincy & Schroeder.
 Simplex—See Plug Test Co.
 Smith & Gunn, 22-26 E. Broad St., Burlington, N. J.
 Sparklets—See Chance Co.
 Sparko-Gap Co., 54 W. 39th St., New York, N. Y. (See page 433.)
 Sure-Fire—See Motor Economy Co.
 Universal Mfg. & Sales Co., 550 W. Harrison St., Chicago, Ill.
 Utility—See Hartenstein, R. P.
 Viktry Sales Co., 389 Fifth Street, Milwaukee, Wis. (See page 509.)
 Visible—See American Automatic Devices Co.
 Willpark—See Armand Machine Works.
 Wizard Arc Spark Plug Co., Wainwright Bldg., St. Louis, Mo.
 X-Ray Plug Detector Co., Pleasant Lake, Ind.

GARAGE AIR COMPRESSORS—See Compressors, Garage Air**GARAGE CANS—See Cans, Gasoline****GARAGE DOOR HANGERS—See Hangers and Hinges, Garage Door****GARAGE DOOR HINGES—See Hangers and Hinges, Garage Door****GARAGE DOOR HOLDERS—See Holders and Openers, Garage Door****GARAGE DOOR OPENERS—See Holders and Openers, Garage Door; also Openers, Electric Garage Door****GARAGE DOORS—See Doors, Special Garage****GARAGE ELEVATORS—See Elevators, Garage****GARAGE FIRE EXTINGUISHERS—See Extinguishers, Garage Fire****GARAGE GASOLINE PUMPS—See Tanks, Gasoline Storage****GARAGE GREASE GUNS—See Guns, Portable Garage Grease****GARAGE HEATERS—See Heaters, Special Garage****GARAGE JACKS—See Jacks, Special****GARAGE TIRE PUMPS—See Compressors, Garage Air****GARAGES, Portable**

Aladdin Co., Bay City, Mich.
 Anchor Corrugating Construction Co., 140 Washington St., New York, N. Y.
 Ashley Steel Building Co., 1790 Broadway, New York, N. Y. "National."
 Austin Co., 16112 Euclid Ave., Cleveland, O. "Steelspan."
 Bossert & Sons, Louis, 1335 Grand St., Brooklyn, N. Y.
 Brooks-Skinner Co., 10-50 Bridge St., North Weymouth, Mass.
 Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo. "Round Ruff."
 Canton Metal Ceiling Co., 2100 Harrison Ave., S. W., Canton, O.
 Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.
 Catherman, J. A., Beaver Springs, Pa.
 Chesbro-Whitman Co., 1167 First Ave., New York, N. Y.
 Chubb Garage Building Co., 1829 Allendale Ave., Cleveland, O.
 Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.
 Davis-Watson Mfg. Co., 9-11 Foundry St., Nashua, N. H.
 Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.
 Dougal, W. M., 1410 G St., Washington, D. C.
 Dow Wire & Iron Works, Louisville, Ky. (See page 159.)
 Easibilt—See Hyde Park Lumber Co.
 Eallen Sheet Metal Works, 1001 30th St., Milwaukee, Wis.
 Fargo Cornice & Ornament Co., 1002-04 Front St., Fargo, N. Dak. "Rusk."
 Farrar Lumber Co., Dalton, Ga.
 Garage Construction Co. of Pittsburgh, Oliver Ave. & Grant St., Pittsburgh, Pa.
 Gold Bond—See Mershon & Morley Co.
 Gordon Mfg. Co., Middletown, O.
 Greis Co., Andrew, 335-37 W. 19th St., New York, N. Y.
 Harry Steel Co., O. K., 2333-35 Papin St., St. Louis, Mo.
 Hoboken Garage Mfg. Co., 74 Bloomfield St., Hoboken, N. J.

Everything is listed under the NOUN or principal word



PRESSURE GAUGES

WE are the largest manufacturer in the world of pressure, vacuum and recording gauges making all designs in all standard pressures—carrying a comprehensive stock $1\frac{1}{2}$ to 12".

UNITED STATES GAUGE CO. General Sales Office
37 Liberty St., New York

Drop-Forgings Hammered Forgings

Our success has been due principally to the personal attention given all orders, large or small.

Our Forgings are clean, free from scale and true to size specified. Stock evenly distributed, making a considerable saving in machining cost.

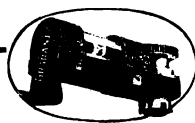
Our machine shop is fully equipped to handle machine work of all kinds—roughing and finishing.

HEAVY FORGINGS, HAMMERED FROM BILLETS

OUR SPECIALTY

SEND US YOUR INQUIRIES

**Milwaukee Forge and
Machine Company**
MILWAUKEE, WIS.



GUARANTY

Spark Intensifier.

A Real Gasoline Saver!

Backed by a Money-Back Guarantee

"The best selling accessory we have sold since being in business." That's what the Motor Accessories Inc. called Guaranty after selling out their first order like "hot cakes"—enclose our order for one thousand" backed up their praise.

"A Blessing to Motorists."

That's what Mr. F. W. Norris of the Norris Real Estate Company called Guaranty, after it had fired dead spark plugs and added power and speed to his Marmon car.

("Creating Customers"—a broadside of interest to jobbers and to every retail accessory dealer, garage, etc., mailed free upon request.)

Throughout the country the Guaranty Intensifier is adding fame and prestige to the well-known Guaranty Line—Guaranty Rear End Truck Units that convert pleasure cars into sturdy trucks—Guaranty Filable Drives for Ford Trucks—the Guaranty Auxiliary Power Take-off—the Guaranty Motor Repair Arm for Broken Ford Crank Case Arms.

GUARANTY MOTORS COMPANY
Cambridge 39, Mass.

Mfrs. of the well-known Guaranty line.

Nation-Wide Advertising Making SPARKO-GAP Buyword For Eight Million Motorists

Large space advertising in sixteen leading publications is telling motorists throughout the country that SPARKO-GAP will give them "A Hot, Fat Spark." Thousands of sets are demonstrating their worth in the hands of satisfied users. Basic patents give us the exclusive rights to the use of the quenched-gap of wireless on gasoline engines. There is no competition. Write for liberal dealer proposition.

Sparko-Gap Company 54 W. 39th Street, New York

Please mention The Automobile Trade Directory

GARAGES, Portable (Continued)

Hodgson Co., R. F., 71 Federal St., Boston, Mass. "Wigwam."
 Huttig Sash & Door Co., 1206 S. Vandeventer Ave., St. Louis, Mo.
 Hyde Park Lumber Co., Burch Ave. & N. & W. R. R., Cincinnati, O. "Easibilt."
 Hydraulic Steelcraft Co. of The Hydraulic Steel Co., Hydraulic Ave., Cleveland, O.
 Karr Portable House Co., 2554 W. Irving Park Blvd., Chicago, Ill.
 Knapp Portable-Permanent Building System, 335 Broadway, New York, N. Y.
 Kolb Bldg. Co., 30 Church St., New York, N. Y.
 Lewis Mfg. Co., 23rd St. & Michigan Ave., Bay City, Mich.
 Liberty Steel Products Co., 322 Michigan St., Chicago, Ill. (Sole Distributors for Steel Fabricating Co., Chicago Heights, Ill. "Stefco.")
 Manchester Mfg. Co., 1210 S. Vandeventer Ave., St. Louis, Mo.
 Mecco—See Moeschl-Edwards Corrugating Co.
 Mereshon & Morley Co., Saginaw, Mich. "Gold Bond."
 Metal Shelter Co., 50 Church St., New York, N. Y. "Pruden."
 Miller Mfg. Co., 3000 Alabama Ave., St. Louis, Mo.
 Millmade Construction Co., Portland, Ore.
 Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Mecco."
 Moister & Co., M., 3331 N. Fifth St., Philadelphia, Pa.
 National—See Ashley Steel Building Co.
 Newport Rolling Mill Co., Newport, Ky.
 Pinyoun & Son, F. C., 3526 Carnegie Ave., Cleveland, O.
 Pro-Slate Panel Buildings, 76th & LaSalle Sts., Chicago, Ill.
 Pruden—See Metal Shelter Co.
 Pruden Co., C. D., Warner, Dock & Bayard Sts., Baltimore, Md. "Prudential," "Quixet."
 Prudential—See Pruden Co.
 Quixet—See Pruden Co.
 Riverside Mfg. Co., 152-66 Riverside Ave., Newark, N. J.
 Round Ruff—See Butler Mfg. Co.
 Rusk—See Fargo Cornice & Ornament Co.
 St. Johns Portable Building Co., St. Johns, Mich.
 Scholes Bros., 1241 Rosedale St., N. S., Pittsburgh, Pa.
 Sheet Metal Products Co., Duluth, Minn.
 Skinner Co., Brooks, 10-38 Bridge St., North Weymouth, Mass.
 Springfield—See Thayer Portable House Co.
 Steel Fabricating Co.—See Liberty Steel Products Co.
 Steelspan—See Austin Co.
 Stefco—See Liberty Steel Products Co.
 Taylor Mfg. Co., 219 Glenridge Ave., Montclair, N. J.
 Thayer Portable House Co., Ralston St., Keene, N. H. "Springfield."
 Togan-Stiles Co., Grand Rapids, Mich.
 U. S. Portable Building Co., 115 Broadway, New York, N. Y.
 Wigwam—See Hodgson Co.

GAS BAGS—See Bags, Rubber Gas

GAS BURNERS—See Burners, Acetylene

GAS GENERATORS — See Generators, Acetylene

GAS LAMPS—See Lamps, Acetylene

GAS PLIERS—See Pliers, Combination

GAS PRODUCERS, MOTOR BOAT—See Producers, Motor Boat Gas

GAS PURIFIERS—See Purifiers, Acetylene Gas

GAS TANK KEYS—See Keys, Acetylene

GAS TANKS—See Tanks, Acetylene

GAS TUBING CONNECTIONS—See Connections, Gas Tubing

GASKET CEMENT—See Cement, Gasket

GASKET CUTTERS—See Cutters, Washer or Gasket

GASKET SHELLAC—See Cement, Gasket

GASKETS, ASBESTOS—See Packing, Asbestos

GASKETS, COMPOSITION—See Packing

GASKETS, COPPER—See Gaskets, Metallic

GASKETS, COPPER, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, CORK—See Washers, Cork

GASKETS, Cork, for Fords

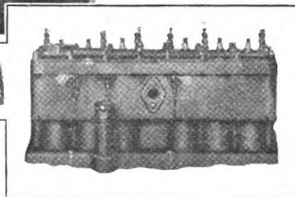
Acco—See Armstrong Cork Co.
 Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 403.)
 Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. "Acco."
 Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1043.)
 Fieldco—See Field & Co.
 Jointite—See Mundet & Son.
 Mundet & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. "Jointite." (See page 301.)

GASKETS, Cylinder Head and Valve Cap, for Fords

(Copper—Asbestos Gaskets)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 115.)
 Fieldco—See Field & Co.
 Fitzgerald Mfg. Co., Torrington, Conn. "Never-Leak." (See page 439.)
 McCord Mfg. Co., Detroit, Mich. "McKim"
 McKim—See McCord Mfg. Co.
 Never-Leak—See Fitzgerald Mfg. Co.
 Universal Gasket & Mfg. Co., 2901 S. 45 St., Cicero, Ill. (See page 437.)

Everything is listed under the NOUN or principal word



Small illustration shows what happens when inferior gaskets are used.

Note to Repair Men: The best engineering authorities specify that a new gasket be used each time the motor head is removed. By doing this you insure against oil, water, and compression leaks, and add an extra profit to every job.

Victor Gaskets Hold Compression

Victor copper asbestos cylinder head gaskets withstand the terrific pressure caused by the explosion in the cylinders.

The power is confined and directed to the driving parts without loss.

Victor gaskets are accurately made of the best materials by skilled workmen to hold this compression under all conditions.

In the Victor line there are nearly 400 types of cylinder head gaskets and more than 4,000 other types.

Jobbers and dealers thus have at their command a complete assortment for every motor need.

VICTOR MANUFACTURING & GASKET CO.

World's Largest Gasket Manufacturers

5750 Roosevelt Road

CHICAGO, ILLINOIS



Please mention The Automobile Trade Directory

GASKETS, Cylinder Head and Valve Cap, for Fords (Continued)

Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill. (See page 435.)

GASKETS, FELT—See Washers, Felt

GASKETS, Felt, for Fords

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 403.)

Algo—See Auburn Leather Goods Co.

Atlantic Felt Cutting Co., 93rd St., & Fourth Ave., Brooklyn, N. Y. (See page 407.)

Auburn Leather Goods Co., 1 Miller St., Auburn, N. Y. "Algo."

Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See pages 401 and 1041.)

Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. "Rounds." (See pages 401 and 1041.)

Fel-Pro—See Felt Products Mfg. Co.

Felt Products Mfg. Co., 2419 W. 14th St., Chicago, Ill. "Fel-Pro."

Felters Co., Millbury, Mass. (See page 405.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1043.)

Lions Felt Co., Dept. A., 338 Myrtle Ave., Brooklyn, N. Y. (See page 405.)

Monarch Felt Works, 39-45 York St., Brooklyn, N. Y.

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Rounds—See Brawley, T. R.

GASKETS, FIBRE—See Fibre, Hard

GASKETS, FIBROUS—See Packing, Asbestos

GASKETS, Fibrous for Fords

Consolidated Packing & Supply Co.—See Eckhouse, Horace H.

Eckhouse, Horace H., 1834 Broadway, New York, N. Y. (Sales Department for Consolidated Packing & Supply Co., New York, N. Y. "Wisold.") (See page 461.)

Wisold—See Eckhouse, Horace H.

GASKETS, Headlight Lenses

Flexo Lens Protector Co., Camden, N. J. (See page 617.)

GASKETS, Metallic

(Copper and Copper-Asbestos)

Evans-Lawrie Co., 705 Beacon St., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 115.)

Evertight—See Gasket Co. of America.

Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "Never-Leak" Gaskets.) (See page 243.)

Fitzgerald Mfg. Co., Torrington, Conn. "Never-Leak." (See page 439.)

Gasket Co. of America, 525 W. Van Buren St., Chicago, Ill. "Kantleak," "Evertight."

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."

Guillot Gasket Mfg. Co., Wm., 2922 Belmont Ave., Chicago, Ill.

Kantleak—See Gasket Co. of America.

McCord Mfg. Co., Detroit, Mich. "McKim."

McKim—See McCord Mfg. Co.

Mikesell Brothers Company, 156 N. La Salle St., Chicago, Ill. (See page 315.)

Never-Leak—See Fitzgerald Mfg. Co.

Phoenix Specialty Mfg. Co., 48-50 Duane St., New York, N. Y.

Right—See Gasket Supply Co.

United States Indestructible Gasket Co., 50 Church St., New York, N. Y.

Universal Gasket & Mfg. Co., 2901 S. 48th Ave., Cicero, Ill. (See page 437.)

Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill. (See page 435.)

GASKETS, METALLIC, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, RUBBER—See Packing, Rubber

GASKETS, VALVE CAP—See Gaskets, Metallic

GASKETS, VALVE CAP, FOR FORDS—See Gaskets, Cylinder Head

GASOLINE, Automobile

American Oil Co., American Bldg., Baltimore, Md. "Amoco."

Amoco—See American Oil Co.

B-Zol—See Koppers Products Co.

Emlenton Refining Co., Emlenton, Pa.

Empire Refineries, Unity Bldg., Tulsa, Okla.

Emergine Refining & Mfg. Co., The Arcade, Cleveland, O.

Gulf Refining Co., Pittsburgh, Pa.

Indian Refining Co., 244 Madison Ave., New York, N. Y.

Keystone—See Tiona Refining Co.

Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "B-Zol."

National Refining Co., Rose Bldg., Cleveland, O. "White Rose."

Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Vigorite."

Petroleum Refining Co., Latonia, Ky.

Powero—See Tide Water Oil Co.

Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.

Socony—See Standard Oil Co. of N. Y.

Sloane & Zook, 101 Main St., Bradford, Pa.

Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Socony."

Sterling Oil Corp., 603 Swan St., Buffalo, N. Y. "X-Tra."

Texasco—See Texas Co.

Texas Co., 17 Battery Pl., New York, N. Y. "Texasco."

Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Tydol," "Powero." (See page 673.)

Tiona Refining Co., Madison Ave. & Belt Ry., Indianapolis, Ind. "Keystone."

Tydol—See Tide Water Oil Co.

Uller, C. C., Tidluote, Pa.

Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal.

Ventura Refining Co., 453 S. Spring St., Los Angeles, Cal.

Vigorite—See Petroleum Products Co.

Waverly Oil Works Co., Pittsburgh, Pa. (See page 671.)

White Rose—See National Refining Co.

X-Tra—See Sterling Oil Corp.

Everything is listed under the NOUN or principal word

Our New Home



This new daylight plant, its up-to-date machinery, our large stocks of raw materials, and our careful yet economical method of handling and inspecting raw materials and finished product, are the reasons behind the uniform high quality and quick delivery of

Universal



Gaskets

UNIVERSAL GASKET & MANUFACTURING CO.

81 Fulton St.,
New York

Factory and General Offices
2901 S. 48th Avenue

Flint P. Smith Bldg.,
Flint, Mich.

Leader News Bldg.,
Cleveland, Ohio

Cicero, Illinois
Suburb of Chicago

Pontiac Bldg.,
St. Louis, Mo.

Export—Kellers Inc., Otis Bldg., Philadelphia, Pa.

- GASOLINE BURNERS**—See Burners, Gasoline
- GASOLINE CANS**—See Cans, Gasoline
- GASOLINE CARBURETERS**—See Carbureters, Gasoline
- GASOLINE COCK CONTROL RODS FOR FORDS**—See Rods, Gasoline Cock Control
- GASOLINE COCKS**—See Cocks, Standard Pet; also Cocks, Spring Key
- GASOLINE CONSUMPTION METERS**—See Gages, Vacuum Tank
- GASOLINE ECONOMIZERS**—See Mixers, Economizers or Agitators and Auxiliary Air Valves
- GASOLINE ENGINE GOVERNORS**—See Governors, Gasoline Engine
- GASOLINE ENGINE INDICATORS**—See Indicators, Gasoline Engine
- GASOLINE ENGINES**—See Engines, Gasoline
- GASOLINE FEED PUMPS**—See Systems, Magnetic Pump
- GASOLINE FEED SYSTEMS**—See Systems, Magnetic Pump Gasoline; also Tanks, Vacuum; also, Regulators, Tank Pressure
- GASOLINE FILTERS**—See Strainers or Separators, Gasoline
- GASOLINE FUNNELS**—See Funnels, Metal
- GASOLINE FURNACES**—See Torches, Gasoline
- GASOLINE GAGES**—See Gages
- GASOLINE LOCK VALVES**—See Valves, Gasoline Lock
- GASOLINE MIXERS**—See Mixers, Economizers or Agitators, Fuel
- GASOLINE MOTORS**—See Engines, Gasoline
- GASOLINE PUMPS**—See Tanks and Systems, Gasoline
- GASOLINE PURIFIERS**—See Strainers or Separators, Gasoline
- GASOLINE RESERVE COCKS**—See Valves, Two Way Tank
- GASOLINE RESERVE COCKS FOR FORDS**—See Cocks, Fuel Supply
- GASOLINE RESERVE VALVES**—See Valves, Two Way Tank
- GASOLINE RESERVE VALVES FOR FORDS**—See Cocks, Fuel Supply
- GASOLINE SEPARATORS**—See Strainers, Gasoline
- GASOLINE STARTERS**—See Starters, Gasoline
- GASOLINE STORAGE SYSTEMS**—See Tanks and Systems, Gasoline Storage
- GASOLINE STORAGE TANKS**—See Tanks and Systems, Gasoline Storage
- GASOLINE STRAINERS**—See Strainers, Gasoline
- GASOLINE SYSTEMS, FEED**—See Systems, Magnetic Pump Gasoline; also Tanks, Vacuum
- GASOLINE TANK GAGES**—See Gages, Gasoline
- GASOLINE TANKS**—See Tanks, Emergency; also Tanks, Fuel; also Tanks and Systems
- GASOLINE TESTERS**—See Hydrometers
- GASOLINE TORCHES**—See Torches, Gasoline
- GASOLINE TREATING COMPOUNDS**—See Compounds, Gasoline Treating
- GATE FASTENERS, TRUCK BODY**—See Fasteners, Truck Body Gate
- GAUGES**—See Gages
- GAUNTLETS, MOTORISTS'**—See Gloves, Motorists'
- GEAR BLANKS**—See Gears, Blank
- GEAR CHECKS**—See Checks, Steering Gear
- GEAR COMPOUNDS**—See Greases, Cup and Gear
- GEAR CUTTING**—See Gears and Pinions; also Machine Work
- GEAR CUTTING MACHINES**—See Machines, Gear Cutting
- GEAR GREASES**—See Greases, Cup
- GEAR HOBBIING MACHINES**—See Machines, Gear Hobbing
- GEAR PULLERS**—See Pullers, Gear and Wheel

Everything is listed under the NOUN or principal word

An Important Improvement in Cylinder Head Gaskets



We are introducing to the trade a new gasket for cylinder heads which embodies an entirely new principle in gasket construction—putting the binding on the outer edge, as shown in the illustration.

This new principle improves the gasket to a remarkable degree, because it prevents blowouts around the outer edges such as occur in 75 percent of the ordinary gaskets.

The bottom layer of these improved gaskets is .010 gauge, with a layer of long-fiber asbestos. The insert plate is of special copperized metal which under the severest tests has proved infinitely stronger and better than copper.

Write today for sample gasket, prices to the trade, etc.

The Fitzgerald Mfg. Co., Torrington, Conn.

THE FINAL THING IN AUTO CURTAIN FASTENERS

THEY ARE FOOL-PROOF

Something New! — Something Neat!



No sharp or pointed surfaces to tear clothing. Ladies, especially, will appreciate this.

Everybody understands their operation, a much desired feature.

A positive lock—and so easy to operate!

RATTLE-PROOF, Dirt and Rust-proof.

Made by a concern having over 20 years experience in the manufacture of fool-proof curtain fasteners.

All styles and finishes.

TRADE BURCO MARK
A REFINED PRODUCT

Mfd. By
G. W. J. Murphy Company
Amesbury, Mass. U. S. A.

Please mention The Automobile Trade Directory

GEAR RIVETING JIGS FOR FORDS—See Jigs, Triple Gear Riveting

GEAR SHIFT EXTENSIONS — See Extensions, Gear Shift Lever

GEAR SHIFT LEVER BALLS—See Balls, Composition Control Lever

GEAR SHIFTERS—See Shifters, Automatic Gear

GEAR STOPS, STEERING — See Stops, Steering Gear

GEAR TESTING INSTRUMENTS—See Instruments, Gear Testing

GEAR TOOTH CHAMFERING MACHINES — See Machines, Gear Tooth Chamfering

GEARS, Auxiliary Transmission, for Fords

Alling-Lander Co., Basket St., Sodus, N. Y.
Beirlein Syndicate, 1148 S. Los Angeles St., Los Angeles, Cal. "Langbein."

Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.

Cronk, E. D. & A. F., 130 Hotel St., Utica, N. Y. "Simplex."

Hess-Scott—See Western Truck Attachment Co.

Holland Machine Co., 132 Water St., South Norwalk, Conn.

Kellenberger Transmission Co., Old National Bank Bldg., Spokane, Wash.

Langbein—See Beirlein Syndicate.

Laurel Motors Corp., Anderson, Ind. (See page 339.)

Moore—See Tractor-Train Co.

Perfecto Gear Differential Co., 2608 King St., Bellingham, Wash.

Simplex—See Cronk, E. D. & A. F.

Tractor-Train Co., 1844 Wall St., Los Angeles, Cal. "Moore." (See page 441.)

Western Truck Attachment Co., 1510 11th Ave., Seattle, Wash. "Hess-Scott."

Woodward & Rowe, 323 Van Ness Ave., San Francisco, Cal.

GEARS, Blank

(See also *Forgings*; also *Castings*; for *Fiber Gear Blanks*—See *Fiber*, Hard)

Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.

American Welding & Mfg. Co., Griswold St., Warren, O.

Ashley Machine Works, 724 University Ave., Rochester, N. Y.

Capitol—See Washington Steel & Ordnance Co.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.

Columbus Forge & Iron Co., Columbus, O. (See page 417.)

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Electro Steel Co., Pittsburgh, Pa.

Ford Speed-Power Equipment Mfrs., 250 W. 54th St., New York, N. Y.

Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 137.)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Hartford Machine Screw Co., Hartford, Conn. (See page 829.)

Jefferson Forge Products Co., Detroit, Mich. (See page 523.)

Ladish Drop Forge Co., Cudahy, Wis. (See page 537.)

Link-Belt Co., Indianapolis, Ind. (See page 237.)

Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.

McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.

McInnes Steel Co., Corry, Pa.

Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.

New England Forge Co., 9 Plymouth St., Worcester, Mass.

Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.

Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.

Pan Motor Co., St. Cloud, Minn.

Steel Forgings Co., Brotherton Rd., Cincinnati, O.

Washington Steel & Ordnance Co., Washington, D. C. "Capitol."

Western Automatic Machine Screw Co., Elyria, O.

Wyman-Gordon, Worcester, Mass. (See Back Bone.)

GEARS, Differential

(Complete Differential Units)

Adco—See American Die & Tool Co.

Adler Mfg. Co., 2407-11 Ohio St., Chicago, Ill.

Allen—See East Iron & Machine Co.

American Die & Tool Co., Reading, Pa. "Adeo." (See page 449.)

Badger—See Lewis Differential Co.

Brown-Lipe-Chapin Co., Syracuse, N. Y. (See page 455.)

Crofoot Gear Works, Hyde Park Ave., at Readville, Boston, Mass. (See page 449.)

Cross Gear & Engine Co., 3200 Bellevue Ave., Detroit, Mich. (See page 645.)

Cullman Wheel Co., 1356 Altgeld St., Chicago, Ill. (See page 899.)

Dorr-Miller—See Forest City Machine & Forge Co.

East Iron & Machine Co., E. Market St., Lima, O. "Allen."

Elberts—See Everitt Co.

Everitt Co., B. F., 294 E. Jefferson Ave., Detroit, Mich. "Elberts."

Fairfield Mfg. Co., Earl Ave., Lafayette, Ind.

Forest City Machine & Forge Co., 5101 Lakeside Ave., N. E., Cleveland, O. "Dorr-Miller."

Frost Gear & Forge Co., Jackson, Mich. (See page 417.)

Jones Gear Co., 965 Wayside Rd., Cleveland, O.

Lewis Differential Co., 121 Huron St., Milwaukee, Wis. "Badger."

New Process Gear Corp., Syracuse, N. Y.

Powrlok Co., 1107 E. 162nd St., Cleveland, O.

Russel Motor Axle Co., North Detroit, Mich.

Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.

Van Dorn & Dutton Co., Cleveland, O.

Warner Gear Co., Muncie, Ind. (See page 447.)

Warner Mfg. Co., Toledo, O.

Warren Gear Products Co., Warren, Pa. (See page 463.)

Weekes-Hoffman Co., Syracuse, N. Y. (See page 477.)

Everything is listed under the NOUN or principal word

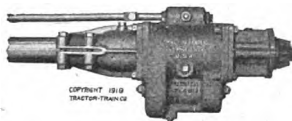
"Moore" 4 Speed Transmissions

— for —

All Ford Cars and Trucks

FOUR FORWARD SPEEDS—TWO REVERSE

No. 1. Standard Model for all Ford Passenger Cars, is manufactured in two gear ratios. The **Underdrive** Gear Ratio doubles the power of the Ford and enables the car to pull through bad roads or up steep grades without difficulty. The **Overdrive** Gear Ratio increases the road speed of the car 20%.



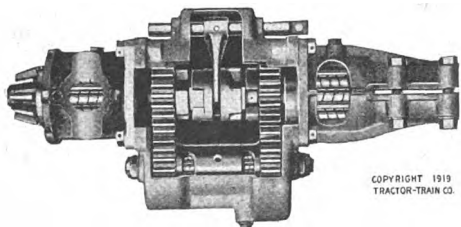
No. 1 Standard Model

No. 5. Truck Model is of heavy construction especially designed for heavy duty service on the Ford One Ton Worm Drive Truck **ONLY**. The **Underdrive** Gear Ratio doubles the power of the truck for extra heavy loads or country travel or hills. The **Overdrive** Gear Ratio increases the road speed of the truck 40%; this type is desirable for fast city delivery service.



No. 5 Truck Model

Installation is easily made by following our printed installation instructions, furnished with each transmission. No elaborate tool equipment is required.



Interior View showing construction

Literature, Current Prices and Terms on request

TRACTOR-TRAIN COMPANY, Manufacturers

1344 Wall Street, Los Angeles, California

Please mention The Automobile Trade Directory

GEARS, Differential, for Fords*(Including both standard and special differentials)*

Badger—See Lewis Differential Co.

Dorr-Miller—See Forest City Machine & Forge Co.

Earle Gear & Machine Co., Stanton & Wyoming Aves., Philadelphia, Pa.

Forest City Machine & Forge Co., 5101 Lakeside Ave. N. E., Cleveland, O. "Dorr-Miller."

Ka-Wood Gear Co., 2281 Superior St., Detroit, Mich.

Lewis Differential Co., 121 Huron St., Milwaukee, Wis. "Badger."

Powrlok Co., 1107 E. 152nd St., Cleveland, O.
Simmons Mfg. Co., 1405-11 Perkins Ave., Cleveland, O.Weekes-Hoffman Co., Syracuse, N. Y.
(See page 477.)**GEARS, DIFFERENTIAL TRACTOR—See Gears, Tractor Differential****GEARS, FIBRE—See Gears and Pinions, Rawhide; also Gears and Pinions, Speed-meter.****GEARS, METAL—See Gears and Pinions Metal****GEARS, Motor Boat Reverse***(See also Clutches, Motor Boat Friction)*

Atlas Machine Works, 4159 St. Aubin Ave., Detroit, Mich. "Bull Dog."

Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.

Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.

Brown Clutch Co., 1737 S. Camp St., Sandusky, O.

Bull Dog—See Atlas Machine Works.

Giles Gear Co., 1339 E. Fort St., Detroit, Mich.

Joe's—See Snow & Petrelli Mfg. Co.

Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.

Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.

Navy Gear Mfg. Co., Port Chester, N. Y.

Paragon Gear Works, Cushman St., Taunton, Mass.

Snow & Petrelli Mfg. Co., 152 Brewery St., New Haven, Conn. "Joe's."

Standard Gear Co., 5900 Commonwealth Ave., Detroit, Mich.

W. & M.—See Wilmarth & Morman Co.

Wilmarth & Morman Co., 1179 Monroe Ave., Grand Rapids, Mich. "W. & M."

GEARS, Motor Boat Steering

Carpenter & Co., Geo. B., 440 N. Wells St., Chicago, Ill.

Edson Mfg. Co., 257 Atlantic Ave., Boston, Mass.

Hall Co., W. S., Wisconsin St., Rochester, N. Y. "Reliance-Rochester."

Reliance-Rochester—See Hall Co.

Sea Bright Dory Works, 491 Atlantic Ave., Long Branch, N. J.

Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

GEARS, Motorcycle TransmissionEclipse Machine Co., Elmira, N. Y.
(See page 163.)**GEARS, RAWHIDE — See Gears and Pinions, Rawhide****GEARS, REVERSE—See Gears, Motor Boat Reverse****GEARS, RING—Gears, Steel Ring****GEARS, Special Ratio Rear Bevel, for Fords***(Rear bevels and pinions of higher ratio than standard for increasing speed of car for racing purposes)*Craig-Hunt—See Speedway Engineering Co.
Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 645.)

Detroit Radiator & Specialty Co., 4335 Woodward Ave., Detroit, Mich.

James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.

MF—See Milwaukee Forge & Machine Co.
Milwaukee Forge & Machine Co., Milwaukee, Wis. "MF." (See page 433.)

Noonan Mfg. Co., D. R., Paris, Ill.

Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 699.)

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig Hunt."
(See page 409.)Weekes-Hoffman Co., Syracuse, N. Y.
(See page 477.)

Weinberg, Samuel, Scranton, Pa. (Distributor.) (See page 347.)

GEARS, SPEEDOMETER—See Gears and Pinions, Rawhide**GEARS, Starter Transmission***(For automatically meshing pinion on starter motor with fly wheel gear)*

Bendix—See Eclipse Machine Co.

Eclipse Machine Co., Elmira, N. Y. "Bendix." (See page 163.)

GEARS, Steel Ring*(For attaching to flywheel for self-starter)*

Adapt Machinery Co., 1624-32 S. Wabash Ave., Chicago, Ill.

Chevrolet, A., 719 N. Illinois St., Indianapolis, Ind.

Crago Machine Works, 1416 Walnut St., Kansas City, Mo.

Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Ia.

Kent Auto Parts Co., 1743 Logan St., Denver, Colo.

Sattler's Machine Shops & Works, 1601 Spring Garden St., Philadelphia, Pa.

Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 811.)

GEARS, Steering*(Complete Steering Gear Units)*

Ailing-Lander Co., Basket St., Sodus, N. Y.

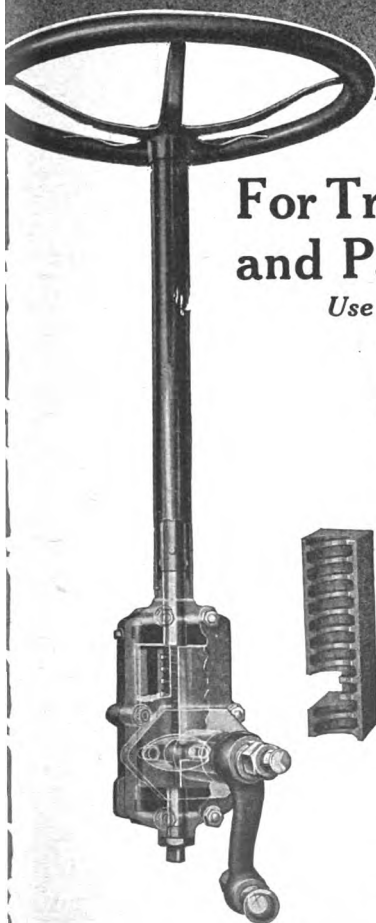
C. A. S. Products Co.—See C. A. S. Engineering Co.

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for C. A. S. Products Co., Columbus, O.)

Everything is listed under the NOUN or principal word

LAVINE

STEERING GEARS

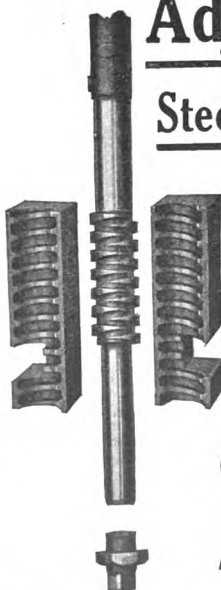


For Trucks, Tractors
and Passenger Cars

Use the

Adjustable

Steering Gear



*Simple in
Design*

The product
of the most
up-to-date
STEERING
GEAR factory

*Quality
and
Service*

LAVINE GEAR COMPANY
60-30 KEEFE AVE., MILWAUKEE, WIS.

Please mention The Automobile Trade Directory

GEARS, Steering (Continued)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Cross Gear & Engine Co., 3200 Bellevue Ave., Detroit, Mich. (See page 645.)
 Ditweller Mfg. Co., Primrose St., Gallon, O.
 Gemmer Mfg. Co., 2137 Merrick St., Detroit, Mich.
 Horat & Co., Lafayette, Ind. (See page 1035.)
 Jacox—See Saginaw Products Co.
 Keystone-Hindley Gear Co., 20th St. & Indiana Ave., Philadelphia, Pa.
 Lavine Gear Co., 60-80 Keefe Ave., Milwaukee, Wis. (See page 443.)
 Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
 Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 445.)
 S & W—See Schweppe & Wilt Mfg. Co.
 Saginaw Products Co., Hamelton & Moore Sts., Saginaw, Mich. "Jacox."
 Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich. "S. & W."
 Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.
 Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.
 Warner Co., T. W., Kilgore & Perkins Aves., Muncie, Ind.
 Wohlrab Gear Co., 1221 Frederick St., Racine, Wis.

GEARS, Steering, for Fords

Alling-Lander Co., Basket St., Sodus, N. Y.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Ospeco—See Michigan Auto Products Co.
 Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.
 Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.
 Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb.

GEARS, STEERING MOTOR BOAT—See Gears, Motor Boat Steering**GEARS, STEERING TRACTOR—See Gears, Tractor Steering****GEARS, TRACTOR—See Gears, Tractor Differential; also Gears, Tractor Steering; also Gears, Tractor Transmission****GEARS, Tractor Differential**

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.
 Dorr-Miller—See Forest City Machine & Forge Co.
 Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
 Forest City Machine & Forge Co., 5101 Lakeside Ave., N. E., Cleveland, O. "Dorr-Miller."
 Powrlok Co., 1107 E. 152nd St., Cleveland, O.

GEARS, Tractor Steering

Alling-Lander Co., Basket St., Sodus, N. Y.
 Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 445.)

GEARS, Tractor Transmission

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.
 Alling-Lander Co., Basket St., Sodus, N. Y.
 Brennan Motor Mfg. Co., 103 Grape St., Syracuse, N. Y.
 Cotta Transmission Co., 2340 11th St., Rockford, Ill.
 Covert Gear Co., Lockport, N. Y. (See page 502.)
 Detroit Gear & Machine Co., 646 E. Woodbridge St., Detroit, Mich.
 Foote Bros. Gear & Machine Co., 234-44 N. Curtiss St., Chicago, Ill. "I. X. L."
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 137.)
 I. X. L.—See Foote Bros. Gear & Machine Co.
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.
 Paragon Gear Works, Cushman St., Taunton, Mass.
 Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.
 Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.
 Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 477.)
 Wohlrab Gear Co., 1221 Frederick St., Racine, Wis.

GEARS, Transmission

(Complete Transmission Units)

Adco—See American Die & Tool Co.
 Alling-Lander Co., Basket St., Sodus, N. Y.
 American Die & Tool Co., Reading, Pa. "Adco." (See page 449.)
 Ball—See New York Gear Works.
 Brennan Motor Mfg. Co., 105 Grape St., Syracuse, N. Y.
 Brown-Lipe Gear Co., Syracuse, N. Y. (See page 455.)
 C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "Rockford.")
 Campbell Transmission Co., Buchanan, Mich.
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.
 Cotta Transmission Co., 2340 11th St., Rockford, Ill.
 Covert Gear Co., Lockport, N. Y. (See page 502.)
 Cross Gear & Engine Co., 3200 Bellevue Ave., Detroit, Mich. (See page 645.)
 Detroit Gear & Machine Co., 646 E. Woodbridge St., Detroit, Mich.
 Detroit Transmission Co., 620 Lyncaste Ave., Detroit, Mich. "Power-Rite."
 Dundore Mfg. Co., 244 Orange St., Reading, Pa.

Everything is listed under the NOUN or principal word

ROSS STEERING GEARS

The superior and distinctive feature of Ross Steering Gears is the screw and nut mechanism, which transfers the rotation of the steering wheel to the steering arm. The nut completely envelops the screw so that the entire bearing surface of both screw and nut are utilized. Because of the easy steering, reliability and satisfactory service which these enormous bearing surfaces guarantee, Ross Gears are used as standard steering equipment by 166 different manufacturers, representing considerably over half the entire industry. This wonderful record has earned for them the distinction of being

*The Steering Gears that
Predominate on Motor
Trucks.*

**Fore and Aft
Steering Gear
Models
BM and BL**

**The
Nut
and
Discs**

The Trunnion Shaft

**The
Screw**

As the screw turns, the nut, which completely envelops it, travels up or down, rotating the cylindrical discs in their recesses. These discs, which hold the projecting arms of the trunnion shaft, rotate it in turn and move the steering arm forward or backward. Compare the enormous bearing surfaces of this screw and nut mechanism with other designs in which only three or four teeth are in contact at one time.

**Fore and Aft
Steering Gear
Model BU**

The illustrations show the three general designs in which Ross Steering Gears are made. These designs, in different sizes and with special fittings, adapt Ross Steering Gears to meet the requirements of any motor truck manufacturer.

*Write for catalog and for any
special information desired.*

**Cross
Steering
Gear
Models
BF, BB
and BA**

ROSS GEAR & TOOL COMPANY 800 HEATH ST. LAFAYETTE, IND.

GEARS, Transmission (Continued)

Durston Gear Corp., 25 Maltbie St., Syracuse, N. Y. (See page 449.)
 Flexo-Motive Corp., McCormick Bldg., Chicago, Ill.
 Frost Gear & Forge Co., Jackson, Mich. (See page 417.)
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Generated Gear & Machine Co., 850 W. Atwater St., Detroit, Mich.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Grant-Lees Gear Co., 2368 69th St., Cleveland, O.
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
 Mechanics Machine Co.—See C. A. S. Engineering Co.
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 Muncie Gear Works, Muncie, Ind. (See page 459.)
 New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y. "Ball."
 Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.
 Power-Rite—See Detroit Transmission Co.
 Rockford—See C. A. S. Engineering Co.
 Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.
 Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind.
 Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.
 Syracuse Gear Co., 103 Grape St., Syracuse, N. Y.
 Turley Gear & Machine Co., 1506-11 N. Tenth St., St. Louis, Mo.
 Van Dorn & Dutton Co., Cleveland, O.
 Warner Co., T. W., Kilgore & Perkins Aves., Muncie, Ind.
 Warner Gear Co., Muncie, Ind. (See page 447.)
 Warner Mfg. Co., Toledo, O.
 Warren Gear Products Co., Warren, Pa. (See page 463.)
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 477.)
 Yuster Axle & Transmission Co. of America, South Bend, Ind.

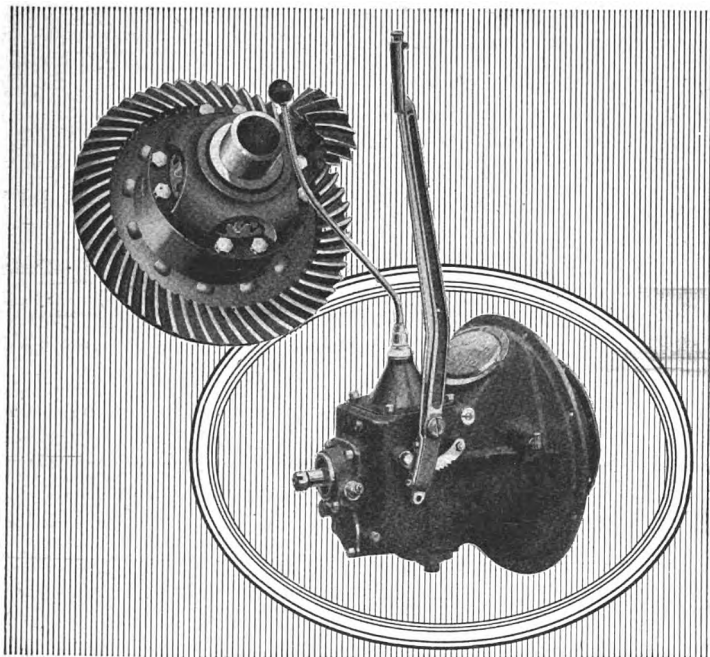
GEARS, TRANSMISSION, FOR FORDS—
See Gears, Auxiliary Transmission**GEARS, TRANSMISSION, MOTORCYCLE**
—See Gears, Motorcycle Transmission**GEARS, TRANSMISSION TRACTOR—See**
Gears, Tractor Transmission**GEARS and PINIONS, Metal**

(Metal Gear cutting on contract to sample or blue print)

Acme Gear Co., Seventh & Wood Sts., Philadelphia, Pa.
 Acme Gear Works, 45 Mills St., Astoria, N. Y.
 Adams Co., 295 Sixth St., Dubuque, Ia.
 Adco—See American Die & Tool Co.
 Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.
 Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.
 Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

American Die & Tool Co., Reading, Pa. "Adco." (See page 449.)
 American Gear Co., 549 E. Illinois St., Chicago, Ill.
 Anderson Rolled Gear Co., Berea Rd. & L. E. & M. S. R. R., Cleveland, O.
 Arthur Co., 188 Front St., New York, N. Y.
 Automotive Gear Works, Atlanta, Ga. (See page 463.)
 Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.
 Baush Machine Tool Co., Springfield, Mass. (See page 607.)
 Behrendt, H. F., 23 Green St., Newark, N. J.
 Bilgram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.
 Boston Gear Works (Norfolk Downs), Quincy, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Buttman Co., F. H., 10271 Berea Rd., Cleveland, O.
 Carpenter-Tew Gear Co., 67 35th St., Brooklyn, N. Y.
 Chicago Gear Mfg. Co., 2823-33 Fulton St., Chicago, Ill.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors) (See page 909.)
 Cincinnati Gear Co., 1825-33 Reading Rd., Cincinnati, O.
 Cleveland Worm Gear Co., 1667 E. 40th St., Cleveland, O.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 449.)
 Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich. (See page 645.)
 Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.
 Detroit Bevel Gear Co., 8130 Jos. Compau Ave., Detroit, Mich.
 Detroit Gear & Machine Co., 646 E. Woodbridge St., Detroit, Mich.
 Dittmer Gear Mfg. Corp., 290 Grand St., Lockport, N. Y.
 Dundore Mfg. Co., 244 Orange St., Reading, Pa.
 Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
 Federal Gear Co., 1754 E. 47th St., Cleveland, O.
 Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
 Foote Bros. Gear & Machine Co., 234-44 N. Curtiss St., Chicago, Ill.
 Frost Gear & Forge Co., Jackson, Mich. (See page 417.)
 Ganschoff Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 137.)
 Gear Grinding Machine Co., Conant Rd. & G. T. R. R., Detroit, Mich.
 General Machine Works, Lamour & Prospect Sts., York, Pa.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Gould & Eberhardt, Colt & Chancellor Aves., Irvington, N. J.
 Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.
 Grant Gear Works, 151 Pearl St., Boston, Mass.
 Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
 Hindley Gear Co., 1105 Frankford Ave., Philadelphia, Pa.
 Hoosier Drilling Machine Co., 613-14 E. Madison St., Goshen, Ind.
 Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 477.)
 James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.

Everything is listed under the NOUN or principal word



WARNER GEAR



PROGRESS in Warner Gears runs parallel with the progress of automotive industry itself. Warner Gear Differential Units were in operation as far back as the year 1902. Clutches, transmissions and controls were brought out a few years later. Today the Warner Gear plant is one of the largest, most modern, most complete gear unit plants in the country and supplies gear units in more than 60 different makes of motor cars and trucks.

The Warner Gear Company is the only organization that manufactures clutches, transmissions, controls, and differentials for motor cars and trucks — the entire *gear system* necessary to apply, transmit and distribute driving power from motor to wheels.

Manufacturers who seek to buy driving gears as a complete and unified mechanism welcome this *system of gear units* made by Warner Gear — correlated and co-ordinated through 19 years of progress in gear making.

WARNER GEAR COMPANY, MUNCIE, IND.
CLUTCHES TRANSMISSIONS CONTROLS DIFFERENTIALS

Please mention The Automobile Trade Directory

GEARS and PINIONS, Metal (Continued)

Johnson Gear Co., 785-87 Folsom St., San Francisco, Cal.
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Keystone-Hindley Gear Co., 30th St. & Indiana Ave., Philadelphia, Pa.
 Killington Machine Co., Industrial Bldg., Syracuse, N. Y.
 Lauer Machine Co., John, 620-26 St. Antoine St., Detroit, Mich.
 Levene Motor Co., 2200 Diamond St., Philadelphia, Pa. (See page 475.)
 Link-Belt Co., Indianapolis, Ind. (See page 237.)
 MF—See Milwaukee Forge Machine Co.
 Machine Products Co., E. 179th St. & St. Clair Ave., Cleveland, O.
 Mead—See National Gear & Truck Wheel Corp.
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
 Meisselbach-Catucci Mfg. Co., 51 Stanton St., Newark, N. J.
 Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.
 Milholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.
 Milwaukee Forge & Machine Co., Milwaukee, Wis. "MF." (See page 433.)
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead."
 New Process Gear Corp., Syracuse, N. Y.
 New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.
 Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
 Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.
 Ogden Mfg. Co., Plymouth, Ind.
 Pacific Gear & Tool Works, 1035 Folsom St., San Francisco, Cal.
 Penmaid—See Pennsylvania Gear & Machine Co.
 Pennsylvania Gear & Machine Co., E. Tioan, Weikel & Janney Sts., Philadelphia, Pa. "Penmaid." (See page 483.)
 Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.
 Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.
 Rex Mfg. Co., 655 Lieb St., Detroit, Mich.
 Ross Machine Co., 1213-15 W. Fourth St., LaFayette, Ind.
 Saunders Co., E. W. 192 Brighton Ave. (Allston), Boston, Mass.
 Sawyer Gear & Mfg. Co., 6122 St. Clair Ave., Cleveland, O.
 Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
 Ster-Bath Co., 143 W. 54th St., New York, N. Y. (See page 477.)
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Steel Forgings Co., Brotherton Rd., Cincinnati, O.
 Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.
 Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.
 T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.
 Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.

Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
 Van Dorn & Dutton Co., Cleveland, O.
 Wappat Gear Works, Mead St. & Braddock Ave., Pittsburgh, Pa.
 Warner Gear Co., Muncie, Ind. (See page 447.)
 Warren Gear Products Co., Warren, Pa. (See page 463.)
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 477.)
 Weinberg, Samuel, Scranton, Pa. (Distributor.) (See page 347.)
 Western Gear Works, Ninth Ave. S. & King St., Seattle, Wash.
 Worcester Gear Works, 33 N. Foster St., Worcester, Mass.

GEARS and PINIONS, Rawhide and Fibre

(Rawhide or Fibre Gear cutting on contrast to sample or blue print)

Chicago Rawhide Mfg. Co., 1201 Euston Ave., Chicago, Ill.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 449.)
 Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
 Fabroll—See General Electric Co.
 Ganschow Co., Wm., 1001-05 Washington Blvd., Chicago, Ill. (See page 137.)
 General Electric Co., Schenectady, N. Y. "Fabroll." (See page 779.)
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
 Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.
 Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.
 Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.
 Van Dorn & Dutton Co., Cleveland, O.

GEARS and PINIONS, Speedometer

(Metal and Fibre Speedometer Gears and Pinions)

Diamond Steel Fibre Co., Bridgeport, Pa.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Ogden Mfg. Co., Plymouth, Ind.
 Saco—See Speedometer Accessories.
 Speedometer Accessories, Plymouth, Ind. "Saco."

GENERATOR BRUSH SANDERS FOR FORDS—See Sanders, Generator Brush

GENERATOR BRUSHES—See Brushes, Magneto, Starter and Generator

GENERATOR COILS—See Windings, Starter and Ignition

GENERATOR COUPLINGS—See Couplings, Magneto and Generator.

GENERATOR HOLDING STANDS—See Stands, Generator Holding

GENERATOR TUBING—See Tubing, Soft Rubber; also Tubing, Brass and Copper

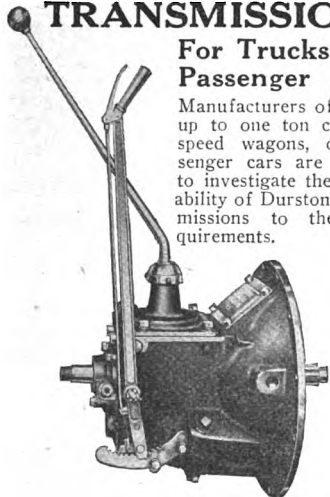
GENERATOR VALVES, MOTOR BOAT—See Valves, Motor Boat Generator

Everything is listed under the NOUN or principal word

DURSTON TRANSMISSIONS

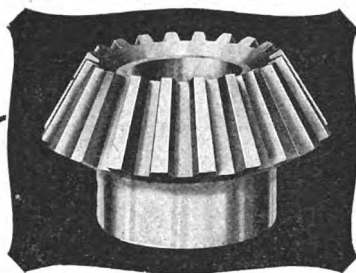
For Trucks and Passenger Cars

Manufacturers of trucks up to one ton capacity, speed wagons, or passenger cars are invited to investigate the adaptability of Durston Transmissions to their requirements.



DURSTON GEAR CORPORATION

25 Maltbie Street, SYRACUSE, N. Y.



"The Standard for Quality"

CROFOOT GEARS

for Maximum Efficiency

Their perfect meshing, the result of exceptional standards of accuracy in manufacture, reduces loss through friction to an absolute minimum. For true economy and perfect gear satisfaction specify Crofoot Gears.

Made in small and medium sizes, in medium and large quantities.

SPURS, SPIRALS, BEVELS, HELICALS, MITRES, WORMS, WORM GEARS

Screw machine work up to 5" diameter. Precision grinding of every description up to 6" diameter for external work and up to 5" diameter for internal work.

CROFOOT GEAR WORKS, Inc.

Hyde Park Avenue at Readville
Boston 37, Mass.

AMERICAN DIE & TOOL CO.



**Machining, Gear Cutting,
Automatic Screw Machine Products,
Hardening, Grinding**

READING

PENNSYLVANIA

Please mention The Automobile Trade Directory

GENERATOR WINDINGS—See Windings,
Starter and Ignition

GENERATORS, Acetylene Gas

(For use on car; for Generators for Welding—See Machines, Autogenous Welding; for Acetylene Tanks—See Tanks, Acetylene)

Brooks Machine Co., 225 W. Lewis St.,
Wichita, Kans.
Columbia—See Hine-Watt Mfg. Co.
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Hall Lamp Co., C. M., Detroit, Mich.
"Solar." (See page 485.)
Hine-Watt Mfg. Co., 1725 S. Michigan Ave.
Chicago, Ill. "Columbia."
Neverout—See Rose Mfg. Co.
Rose Mfg. Co., Philadelphia, Pa. "Never-
out." (See page 503.)
St. Paul Welding & Mfg. Co., 174 W. Third
St., St. Paul, Minn. "Torit."
Solar—See Hall Lamp Co.
Torit—See St. Paul Welding & Mfg. Co.
Victor—See Corcoran-Victor Co.

GENERATORS, ACETYLENE GAS MOTORCYCLE—See Generators, Motorcycle; also Generators, Tractor Acetylene

GENERATORS, Electric Lighting and Battery Charging

(See also Starters, Electric; also Systems, Electric Lighting)

American Bosch Magneto Corp. (Brightwood),
Springfield, Mass. "Bosch."
American Ever Ready Works, Long Island
City, N. Y.
Arrow Mfg. Co., 618-22 Broadway, Toledo, O.
Auto-Lite—See Electric Auto-Lite Corp.
Auto-Sparker—See Motsinger Device Mfg. Co.
Bijur Motor Appliance Co., Hoboken,
N. J. (See page 453.)
Bosch—See American Bosch Magneto Corp.
Dayton Engineering Laboratories Co., 329 E.
First St., Dayton, O. "Delco."
Delco—See Dayton Engineering Laboratories
Co.
Dyneto Electric Corp., Syracuse, N. Y.
(See page 451.)
Electric Auto-Lite Corp., Toledo, O. "Auto-
Lite."
General Electric Co., Schenectady, N. Y.
(See page 779.)
Harris Electric Co., 255 California St., San
Francisco, Cal. "Neuland."
Hertner Electric & Mfg. Co., 1905 W. 112th St.,
Cleveland, O.
Holtzer-Cabot Electric Co., 125 Armory St.,
Boston, Mass.
Huff—See Simms Magneto Co.
Ita Manufacturers, Glen Ellyn, Ill.
Kemco Electric Mfg. Co., 1362 E. Third St.,
Cleveland, O.
L-N—See Leeco-Neville Co.
Lauraine Magneto Co., Long Island City,
N. Y.
Leeco-Neville Co., 5368 Hamilton Ave., Cleve-
land, O. "L-N."

Leonard Electric Co., Ward, Mt. Vernon,
N. Y.

Midco—See Teagle Co.

Motsinger Device Mfg. Co., 26th & Ferry Sts.,
Lafayette, Ind. "Auto-Sparker."

Neuland—See Harris Electric Co.

North East Electric Co., Rochester, N. Y.
(See page 525.)

Ramy Electric Co., 1623 E. Grand Blvd.,
Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave.,
East Orange, N. J. "Huff."

Teagle Co., 1125 Oregon Ave., Cleveland, O.
"Midco."

Verlux Co., Alliance, O.

Vesta Battery Corp., 2100 Indiana Ave., Chi-
cago, Ill.

Wagner Electric Mfg. Co., 6400 Plymouth
Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., 82
Worthington St., Springfield, Mass.
(See pages 926 and 927.)

GENERATORS, Electric Lighting and Battery Charging, for Fords

(See also Starters, Electric)

Comet Electric Co., 1237 St. Paul St., Indian-
apolis, Ind.
Detroit Starter Co., 124 E. Larned St., De-
troit, Mich. "Genolite."
Dyneto Electric Corp., Syracuse, N. Y.
(See page 451.)
Genolite—See Detroit Starter Co.
Holtzer-Cabot Electric Co., 125 Armory St.,
Boston, Mass. "J-S."
Ita Manufacturers, Glen Ellyn, Ill.
J-S—See Holtzer-Cabot Electric Co.
Kemco Electric Mfg. Co., 1362 E. Third St.,
Cleveland, O.
Lauraine Magneto Co., Long Island City, N. Y.
Pellet Magneto Co., 25th St. & Wabash
Ave., Chicago, Ill. (See page 901.)
Superior Engineering Co., 332 Third Ave.,
Pittsburgh, Pa.
Teco—See Titan Engineering Co.
Titan Engineering Co., 603 W. Pearl St., Union
City, Ind. "Teco."
Wells Mfg. Co., R. C., 114 S. Brooke St., Fond
du Lac, Wis.
Westinghouse Electric & Mfg. Co., 82
Worthington St., Springfield, Mass.
(See page 926 and 927.)

GENERATORS, ELECTRIC LIGHTING, MOTORCYCLE—See Generators, Motorcycle Electric

GENERATORS, ELECTRIC LIGHTING, TRACTOR—See Generators, Tractor Electric Lighting

GENERATORS, Motorcycle Acetylene

Hall Lamp Co., C. M., Detroit, Mich.
"Solar." (See page 485.)
Solar—See Hall Lamp Co.
Superior Lamp Mfg. Co., 148-50 W. 52d St.,
New York, N. Y.

Everything is listed under the NOUN or principal word

~~Dyneto~~ 1 and 2-Unit

Starting and Lighting Systems

for All Motor Cars and Motor Trucks

SIMPLICITY is the keynote of Dyneto design. For this reason Dyneto Starting and Lighting Systems are found as standard equipment on many well known cars and motor trucks. Ball bearings, freedom from complicated switches and wiring, and their thorough dependability make Dyneto—1 or 2 unit—systems a valuable aid to any manufacturer.



Birmingham, Ala.	The Auto Ignition Lighting & Repair Co.
Tucson, Ariz.	Schweitzer Machine Company
Phoenix, Ariz.	Schweitzer Machine Company
Little Rock, Ark.	Arkansas Battery Company
San Francisco, Calif.	Electric Equipment Co.
San Francisco, Calif.	Charles Hubel & Co. Auto Electric Service Co.
Denver, Colo.	Electric Service & Engineering Co.
Hartford, Conn.	Universal Auto Co.
Stamford, Conn.	Stamford Electrical Contracting Co.
Washington, D. C.	Charles Hubel & Co. Auto Electric Service Co.
Miami, Fla.	Ward Engineering & Battery Co.
Atlanta, Ga.	Southern Auto Equipment Co., Inc.
Savannah, Ga.	A. J. Lowery, Electric Service Station
Idaho, Idaho.	Western Ignition & Battery Co., Inc.
Lewiston, Idaho.	Wm. E. Chase Engineering Co.
Chicago, Ill.	Arthur Jones Electric Co.
Decatur, Ill.	Decatur Battery Service Station
Elkhart, Ind.	Hosco Electric Service Co.
Evansville, Ind.	National Auto Supply Co.
Indianapolis, Ind.	Storage Battery Co.
Vincennes, Ind.	Meyers Motor Elec. Co.
Greto, Iowa.	Sheridan Electric Co.
Des Moines, Iowa.	Bernhard & Turner Automobile Co.
Manchester, Iowa.	Electric Service Station, Louis Black, Prop.
Sioux City, Iowa.	Storage Battery Electric Works
Sipourne, Iowa.	Friday's Battery & Elec. Service
Arkansas City, Kan.	Mears Bros.
Manhattan, Kans.	Keele Electrical Company
Topeka, Kan.	Keele Electric Co.
Enid, Okla.	Enid Auto Elec. Co.
Okmulgee, Okla.	Automotive Electric Service Co.
Oklahoma City, Okla.	Johnson Elec. Co.
Tulsa, Okla.	Walsh & Johnson
Pendleton, Ore.	Wm. E. Chase Co.
Portland, Ore.	Electric Service Auto Co.
Greensburg, Pa.	Edward S. Dawson
Harrisburg, Pa.	Automotive Elec. Service Co.
Philadelphia, Pa.	Auto Equip. & Service Co.
Pittsburgh, Pa.	Doubleday-Hill Electric Co.
Reading, Pa.	General Auto Supply Co.
Charleston, S. C.	Gas Engine & Elec. Co.
Columbia, S. C.	Auto Electric Co., Inc.
Aberdeen, S. D.	Farmer Electric Lighting Corp.
Memphis, Tenn.	H. P. Woods
Abilene, Tex.	Carter's Auto Repair
Dallas, Tex.	Otto A. Hille Co.
El Paso, Tex.	Western Battery & Magneto
Fort Worth, Tex.	Starter Service Co.
Wichita Falls, Tex.	Electric Service Station
Salt Lake City, Utah.	Edwards-Warden Motor Parts Co., Inc.
Richmond, Va.	Richmond Auto Elec. Co.
Norfolk, Va.	Bellanca Elec. Co., Inc.
Seattle, Wash.	O. L. Willett & Co.
Spokane, Wash.	Wm. E. Chase Co.
Yakima, Wash.	Wm. E. Chase Co.
Madison, Wis.	Automotive Elec. Co., B. J. Nickles
Milwaukee, Wis.	Wisconsin Magneto Exchange

CANADA

Calgary, Alta.	Electric Service Co., Ltd.
Ottawa, Ont.	Geo. J. Seattle
Toronto, Ont.	National Elec. Co., Ltd.
Saskatoon, Sask.	National Elec. Co., Ltd.
Montreal, Que.	Storage Battery & Motor Supplies, Ltd.

Send drawings and specifications for our recommendations

DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

21 State Street,
NEW YORK, N. Y.

Export Representatives: BENJAMIN WHITTAKER, INC.

88 Ludgate Hill,
LONDON, E. C. 4

Please mention The Automobile Trade Directory

GENERATORS, Motorcycle Electric Lighting

Alternacyle—See Art Metal Works.

A. B. C. Generator Co., 1115-17 S. Olive St., Los Angeles, Cal.

Art Metal Works, Aronson Sq., Newark, N. J. "Alternacyle." (See page 495.)

Leece-Neville Co., 5568 Hamilton Ave., Cleveland, O.

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

GENERATORS, STEAM STORAGE BATTERY OPENINGS—See Steamers, Storage Battery

GENERATORS, Tractor Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 485.)

Solar—See Hall Lamp Co.

GENERATORS, Tractor Electric Lighting

Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Nicolite."

Dyneto Electric Corp., Syracuse, N. Y. (See page 451.)

Nicolite—See Arrow Mfg. Co.

North East Electric Co., Rochester, N. Y. (See page 525.)

Reagle Co., 1125 Oregon Ave., Cleveland, O.

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

GERMAN SILVER—See Brass, Sheet

GIMPS, UPHOLSTERY—See Bindings, Upholstery

GLARE DIMMERS—See Dimmers, Glare

GLARE PREVENTERS—See Dimmers or Shades, Headlight

GLARE STOPPERS—See Dimmers, Glare

GLASS, BODY—See Glass, Polished Plate

GLASS CURTAIN WINDOWS—See Windows, Glass Curtain

GLASS CUTTERS—See Cutters, Circular Glass

GLASS FRONTS—See Shields, Wind

GLASS, Polished Plate and Flat Drawn

(For windshields and closed body work; also for lamp, clock, gage and meter glasses)

American Auto Glass Co., 5079 Broadway, Chicago, Ill. (See page 479.)

American Glass & Beveling Co., Clark & Harriett Sts., Cincinnati, O.

American Window Glass Co., Farmers Bank Bldg., Pittsburgh, Pa. (See page 481.)

Automobile Glass Co., First St., bet. Congress & Fort Sts. W., Detroit, Mich. (See page 475.)

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.

Brigstocke, M. K., 1027-29 Park St., Peekskill, N. Y.

Chesler & Son Co., J., 147 Gratton St., Brooklyn, N. Y.

Eureka—See Glass Founders Corp.

Glass Foundries Corp., Washington Ave. & P. R. R., Milltown, N. J. "Eureka."

Harris, Chas. H., 142-46 W. 24th St., New York, N. Y.

Hires-Turner Glass Co., 30th & Walnut Sts., Philadelphia, Pa. "Lighthouse."

Lighthouse—See Hires-Turner Glass Co.

Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill.

Nurre Mirror Plate Co., Bloomington, Ind.

Peaslee-Gaulbert Co., Louisville, Ky. (See page 693.)

Perfection Co., 400 W. Ohio St., Chicago, Ill. (See page 1005.)

Rawle Co., M., 525-35 W. 54th St., New York, N. Y.

Royal Glass Works, 120-26 Wooster St., New York, N. Y. (See page 525.)

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.

Schoonover Glass Co., W. J., 801 Wyoming Ave., Scranton, Pa.

Smith, Thos. J. D., 63-71 Chambers St., Newark, N. J.

Standard Glass Co., 1766 Mt. Elliott Ave., Detroit, Mich.

Tyler & Hippach, 366-400 W. Ohio St., Chicago, Ill.

Waxman & Co., A., 420 N. Third St., Philadelphia, Pa.

Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.

GLASS, WINDSHIELD—See Glass, Polished Plate

GLASS WINDSHIELD CLEANERS—See Cleaners, Wind Shield; also Compounds, Glass Wind Shield

GLASS WINDSHIELD WINGS—See Shields, Auxiliary Windshield

GLASS, WINDOW—See Glass, Polished Plate

GLASSES, Lamp

(For Dimming or Deflecting lamp glasses—See Dimmers, Headlight)

Amesbury Bent Glass Co., Amesbury, Mass.

Houze Convex Glass Co., L. J., Point Marion, Pa.

Jefferson Glass Co., State St., Follansbee, W. Va.

Johnston Glass Co., Hartford City, Ind.

Lancaster Lens Co., 220-26 W. Main St., Lancaster, O.

Specialty Glass Co., Huntington, W. Va.

Standard Glass Specialty Co., Morgantown, W. Va.

Everything is listed under the NOUN or principal word

SERVICE STATION
BiJur
MOTOR APPLIANCE CO.

BIJUR SYSTEM ON ALL TEN FLOORS

WHERE TO GET BIJUR SERVICE

The Bijur Motor Appliance Company specializes in the design and manufacture of starting and lighting equipment. A ten-story plant located in Hoboken, N. J., is devoted entirely to the manufacture of electrical equipment and supply parts for passenger cars, trucks, seaplanes, airplanes, blimps, and other automotive machines.

Complete Bijur Equipments, Including Motor, Generator, Gear Shift and Supply Parts, are made under one roof at the Bijur Plant.

The Bijur System was first adopted by Packard in 1912. Today it is standard equipment on many leading cars.

Over 130 Bijur Service Stations in the leading centers of the country are provided with complete information concerning the various models in service and spare parts and supplies manufactured by the Bijur Motor Appliance Company are carried in all the leading cities of the country.

ALABAMA Birmingham	Electric Battery Company.	KENTUCKY Louisville	Rummel-Smith Motor Company	OKLAHOMA Oklahoma City	Johnson Electric Company
ARIZONA Globe	Western Machinery Company.	LOUISIANA New Orleans	Suhren, Inc.	Tulsa	Walsh Electric Company
Nogales	Western Machinery Company.	MARYLAND Cumberland	The Automobile Repair Company	OREGON Portland	Wm. R. Chase Eng. Company
Phoenix	Western Machinery Company.	MASSACHUSETTS Boston	The Elmer-Lark Company	Seaside	Sunset Electric Company
Tucson	Western Machinery Company.	Fall River	Alexander, Michael	PENNSYLVANIA Allentown	Auto Electric Company
ARKANSAS Little Rock	Brown and Holland	Salem	Krohn Service Station	East Liberty	Doudeley-Hill Electric Company
CALIFORNIA Bakersfield	Arkansas Battery Company	Springfield	Jenkins & Robinson	(Pittsburgh)	Electric Battery & Construction
El Centro	Morgenson Electric Machine Works	Worcester	Auto Electric & Service Company	Harrisburg	Excelsior Auto & Battery Company
Essex	Minor Electric Company	Yonkers	Leon S. Heth Company	Philadelphia	Auto Equip. & Service Company
Los Angeles	Electrical Service Company	MICHIGAN Detroit	United Electric Service Company	Reading	Shirk's Auto & Ignition Company
Long Beach	Central California Electric Company	Grand Rapids	Reahard Bros. Co., Inc.	Richmond	Reed Automobile Service
San Diego	Central California Electric Company	Minneapolis	Auto Electric & Service Company	RHODE ISLAND Providence	American Ball Company
San Francisco	Motor Electric Company	MINNESOTA Duluth	United Electric Service Company	SOUTH CAROLINA Charleston	The Gas Engine & Electric Co., Inc.
COLORADO Denver	Auto Electrical Equipment Company	St. Paul	Neel Repair Shop	Columbia	Auto Electric Service, Inc.
Monte Vista	Automotive Service Agency	MISSISSIPPI Jackson	Sorber-Kuhn Auto Supply Company	SOUTH DAKOTA Sioux Falls	Auto Electric Service, Inc.
CONNECTICUT Bridgeport	Central California Electric Company	Joplin	The E. S. Crowe Electric Company	TENNESSEE Chattanooga	Mudge Auto Electric Company
Hartford	The Electric Service & Eng. Co.	Kansas City	Ute Electric Company	Knoxville	McNitt & Company
New Haven	Robert R. Ashwell	St. Joseph	S. G. Hoffman Magneto Company	Memphis	Southern Electric Service Company
DISTRICT OF COLUMBIA Washington	The New Haven Electric Company	St. Louis	McGraw Service Shop	TEXAS Albany	Carter's Auto Repair Shop
DELAWARE Wilmington	Miller-Dudley Company	MONTANA Butte	McGraw Service Shop	Dallas	Automotive Electric Company
FLORIDA Jacksonville	Ward Eng. & Battery Company	NEBRASKA Lincoln	McGraw Service Shop	El Paso	Western Battery & Magneto Company
Miami	Ward Eng. & Battery Company	Omaha	Auto Electric Service Corporation	Fort Worth	Starter Service Company
GEORGIA Atlanta	Paul D. O'Kelly Company	NEW HAMPSHIRE Manchester	Ebene F. Austin	Houston	Hallbert-Still Electric Company
IDAHOO Boise	W. O. Weston Company	NEW JERSEY East Rutherford	G. T. Garage	Los Angeles	Ragdale Auto Supply Company
Butte	Western Ignition & Battery Company	Hoboken	Bijur Motor Appliance Company	San Antonio	S. K. Callahan
ILLINOIS Chicago	Edward-Warden Motor Parts Co.	NEW MEXICO Albuquerque	The McCloskey Automobile Company	Sioux Falls	Edwards-Warden Motor Parts Co.
Decatur	Arthur Jones Electric Company	Deming	Deming Service Battery Company	UTAH Salt Lake City	Edwards-Warden Motor Parts Co.
Duquoin	Deane Battery Service Station	NEW YORK Albany	Auto Electric Equip. & Repair Co.	VIRGINIA Norfolk	Reliance Electric Company
Evansville	Auto Electrical Service Station	Amsterdam	A. A. Sealey, Jr.	Richmond	Southern Auto Repair Company, Inc.
Springfield	Chapin Electric Garage	Buffalo	Elliot Engineering Co., Inc.	WASHINGTON Seattle	Sunset Electric Company
INDIANA Ellettsville	Electrical Testing Company	Brooklyn	P. J. Durham Co., Inc.	Spokane	Wm. R. Chase Eng. Company
Fort Wayne	Chapin Electric Garage	Buffalo	Morland Auto Supply Corporation	Yakima	Wm. R. Chase Eng. Co.
Hartsville	Chapin Electric Garage	New York City	P. J. Durham Co., Inc.	WEST VIRGINIA Wheeling	McKibbey-Ewing Electric Company
IOWA Cedar Rapids	Chapin Electric Garage	Rochester	Pase Electric Service	WISCONSIN Kewaunee	Auto Service Company
Des Moines	Chapin Electric Garage	Schenectady	Starter & Ignition Service Co.	Madison	Madison Battery & Service Company
Keokuk	Chapin Electric Garage	Syracuse	Burr Fowler Company	Milwaukee	Wisconsin Magneto Exchange
Laurens	Chapin Electric Garage	Troy	Sturtevant Electric Company	Oshkosh	Largest Motor Company
KANSAS Lawrence	Chapin Electric Garage	NORTH CAROLINA Asheville	Asheville Battery Company	Shelbyton	Acres Electrical Company
KENTUCKY Lexington	Chapin Electric Garage	NORTH DAKOTA Fargo	Fargo Plumbing & Heating Company	FOREIGN Australia	Duncan & Fraser, Ltd.
LOUISIANA New Orleans	Chapin Electric Garage	OHIO Akron	A. M. Allen Electric Company	Canada	Fry Bros.
MAINE Bangor	Chapin Electric Garage	Canton	Moock Electric Supply Company	China	Michael E. L. Ltd.
MARYLAND Baltimore	Chapin Electric Garage	Cincinnati	Baile Engineering Company	Cuba	Electric Equipment Co. of Cuba
MASSACHUSETTS Boston	Chapin Electric Garage	Cleveland	Baumgarner Company	Hawaii	Duncan Watson Company
MICHIGAN Detroit	Chapin Electric Garage	Columbus	C. R. Electric Service	London, W.	Duncan Watson Company
MINNESOTA Duluth	Chapin Electric Garage	Dayton	Electric Power Maintenance Company	NEW ZEALAND Wellington	W. H. Marsh, P. O. Box No. 41
MISSISSIPPI Jackson	Chapin Electric Garage	El Paso	Electric Power Maintenance Company	SOUTH AFRICA East London	Evans & Company, Ltd.
MISSOURI St. Louis	Chapin Electric Garage	El Paso	Electric Power Maintenance Company		

BiJur Motor
Appliance Company
Main Office & Factory: Hoboken, N. J. Detroit Office: Kresge Building

Please mention The Automobile Trade Directory

GLASSES, Lubricator*(Glass cylinders and tubes for lubricators and sight feeds)*

Bache & Co., Emon, West & Hubert Sts., New York, N. Y.
 Doerco—See Doerr Glass Co.
 Doerr Glass Co., Peach St. & Blvd., Vineland, N. J. "Doerco."
 Monoriff—See Rogers Co.
 Rogers Co., H. A., 57 Walker St., New York, N. Y. "Monoriff." (Importers.)

GLOVES and GAUNTLETS, Motorists'

Allen Glove Co., 15 Forrest St., Gloversville, N. Y.
 American Glove Co., 2035 Churchill St., Chicago, Ill.
 Bi-Plane—See Morrison-Ricker Mfg. Co.
 Bishop Co., J. H., Wyandotte, Mich.
 Black Ghost—See Heagle, James.
 Boss Mfg. Co., 70 Washington St., Brooklyn, N. Y. "Wallopers."
 Brad—See Bradford, R. E.
 Bradford, R. E., 5 Burr St., Gloversville, N. Y. "Brad."
 Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.
 Eisendrath Glove Co., 3001 Elston Ave., Chicago, Ill.
 Ellsworth & Thayer Mfg. Co., 338-40 Broadway, Milwaukee, Wis. "Great Western."
 Fried, Ostermann Co., 617-45 Reed St., Milwaukee, Wis. "Price."
 Gloversville Auto-Glove Co., 69-73 W. Fulton St., Gloversville, N. Y. "M. W. M."
 Great Western—See Ellsworth & Thayer Mfg. Co.
 Grinnell—See Morrison-Ricker Mfg. Co.
 Grip-Tite—See Morrison-Ricker Mfg. Co.
 Hansen Mfg. Co., O. C., 517 Wright St., Milwaukee, Wis.
 Heagle, James, First Ave. & Market St., Johnstown, N. Y. "Black Ghost."
 Limp-Kuff—See Morrison-Ricker Mfg. Co.
 Luther Glove Co., J. P., Berlin, Wis. "Red Ball."
 M. W. M.—See Gloversville Auto Glove Co.
 Michigan Motor Garment Co., Greenville, Mich. "Never-Rip." (See page 250.)
 Morawetz Co., 317-35 E. Water St., Milwaukee, Wis.
 Morrison-Ricker Mfg. Co., 72 Broad St., Grinnell, Ia. "Grinnell," "Rist-Fit," "Grip-Tite," "Limp-Kuff," "Bi-Plane."
 Never-Rip—See Michigan Motor Garment Co.
 Pontiac Knitting Co., Pontiac, Mich.
 Price—See Fried, Ostermann Co.
 Red Ball—See Luther Glove Co.
 Ripon Knitting Works, Ripon, Wis.
 Rist-Fit—See Morrison-Ricker Mfg. Co.
 Save-A-Sleeve—See U. S. Glove Co.
 Segco—See Syracuse-Eldridge Co.
 Shayne & Co., C. C., 126 W. 42d St., New York, N. Y.
 Stifel & Sons, J. L., Wheeling, W. Va.
 Syracuse-Eldridge Co., 1108 Spring St., Syracuse, N. Y. "Segco."
 U. S. Glove Co., Marion, Ind. "Save-A-Sleeve."
 Wallopers—See Boss Mfg. Co.
 Walrath Glove Co., Gloversville, N. Y.

GLOVES and MITTENS, Aviators*(For Clothing—See Clothing; for Helmetts—See Helmetts)*

Centemeri & Co., P., 400 Fifth Ave., New York, N. Y.
 Hansen Mfg. Co., O. C., 517 Wright St., Milwaukee, Wis.
 Morrison-Ricker Mfg. Co., 72 Broad St., Grinnell, Iowa.
 Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

GLOVES, Rubber*(Cold Proof Gloves for storage battery workers)*

Aetna Rubber Co., 815 E. 79th St., Cleveland, Ohio.
 Faultless Rubber Co., Ashland, O.

GLUE, Aircraft Liquid*(See also Cement, Aeroplane Waterproof)*

Dependon—See Feigel & Bro.
 Feigel & Bro., M., 185 Wooster St., New York, N. Y. "Dependon."
 Ferdinand & Co., L. W., 153 Kneeland St., Boston, Mass. "Jeffery's."
 Jeffery's—See Ferdinand & Co.
 Monte Waterproof Glue Co., 136 W. Lake St., Chicago, Ill.

GLUE HEATERS—See Heaters, Glue**GLUE, LINOLEUM—See Cement, Linoleum****GOGGLES, Aviators**

American Optical Co., Southbridge, Mass. "Wellsworth."
 Aviglass—See Hardy & Co.
 Dwell-Kaiser Co., 237-51 Elm St., Buffalo, N. Y.
 Hardy & Co., F. A., 10 S. Wabash Ave., Chicago, Ill. "Aviglass."
 Resistal—See Strauss & Buegeleisen.
 Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Resistal."
 Uhico—See Uhlemann Optical Co.
 Uhlemann Optical Co., Mallers Bldg., Chicago, Ill. "Uhico."
 Wellsworth—See American Optical Co.

GOGGLES, Mechanics and Welders

Adams, William C., 323 Boylston St., Boston, Mass.
 American Thermo-Ware Co., 16 Warren St., New York, N. Y.
 American Welding Co., 2301 Olive St., St. Louis, Mo.
 Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Fyber-Weld," "Kraftguard."
 Cover, H. S., Chippewa Ave., South Bend, Ind.
 Fyber-Weld—See Chicago Eye Shield Co.
 Kraftguard—See Chicago Eye Shield Co.
 Merry Optical Co., 1009 Walnut St., Kansas City, Mo.
 Resistal Industrielle—See Strauss & Buegeleisen.

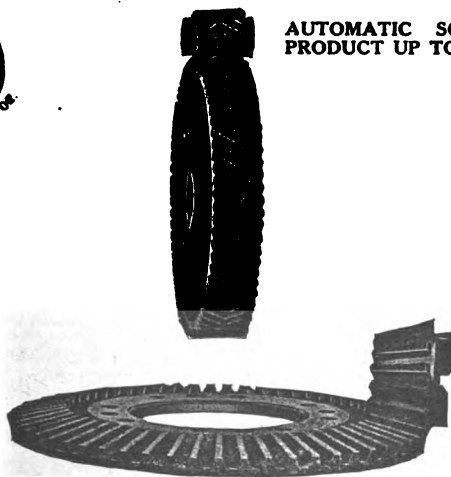
Everything is listed under the NOUN or principal word

BROWN-LIPE-CHAPIN
DIFFERENTIALS
DRIVE GEARS DRIVE PINIONS
BROWN-LIPE-GEAR
TRANSMISSIONS
CLUTCHES CONTROL SETS
 Both at Syracuse, N.Y.



GEARS

CUT RACKS
 Manufacturing
 and Cutting



AUTOMATIC SCREW MACHINE
PRODUCT UP TO 5 1/4" DIAMETER

**Hoists for
 Automobile
 Dumping
 Bodies**

MEISEL PRESS MFG. CO.
945 Dorchester Avenue
Boston, 25 Mass.



Please mention The Automobile Trade Directory

GOGGLES, Mechanics and Welders (Continued)

Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Welda," "Resistal Industriele."
Strong, Kennard & Nutt Co., 2044 E. Ninth St., Cleveland, O.
Welda—See Strauss & Buegeleisen.
Willson Goggles, Inc., Second & Washington Sts., Reading, Pa.

GOGGLES and EYE SHIELDS, Motorists

A-Justo—See Aske Moore Corp.
Adams, William C., 323 Boylston St., Boston, Mass.
Alberx—See Willson & Co.
Allwon—See Strauss & Buegeleisen.
American Optical Co., Southbridge, Mass. "Sedan," "Biplane."
American Spectacle Co., 47 W. 34th St., New York, N. Y.
American Thermo-Ware Co., 16 Warren St., New York, N. Y. "Autocrat."
Anito—See New Era Optical Co.
Aske Moore Corp., 19 Lake Ave. N., Duluth, Minn. "A-Justo."
Autocrat—See American Thermo-Ware Co.
Autoglass—See Hardy & Co.
Biplane—See American Optical Co.
Cesco—See Chicago Eye Shield Co.
Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Cesco," "Nonstrain."
De Luxe—See Griffin, G. A.
Dim-A-Glare—See Hainert & Son.
Dimmer Goggle Co., Whiting, Ind.
Eff & See—See Frank & Co.
Eyetelects—See Strauss & Buegeleisen.
Frank & Co., Arthur, 71-73 Nassau St., New York, N. Y. "Eff and See."
George—See Hainert & Son.
Griffin, G. A., 110 E. 23d St., New York, N. Y. "De Luxe."
Haco—See Hudson Products Co.
Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "George," "Dim-A-Glare."
Hudson Products Co., 44 E. 23d St., New York, N. Y. "Haco."
Hardy & Co., F. F., 10 S. Wabash Ave., Chicago, Ill. "Autoglass."
Humaco—See Humboldt Mfg. Co.
Humboldt Mfg. Co., 368 Hyde Park Ave. (Forest Hills), Boston, Mass. "Humaco."
Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.
Johnston Co., Geo. S., 5 S. Wabash Ave., Chicago, Ill.
Keystone—See Willson & Co.
King Optical Co., F. W., Euclid Arcade Bldg., Cleveland, O.
Kirstein Sons Co., E., 242 Andrews St., Rochester, N. Y. "Shur-On."
Mucalite—See Strauss & Buegeleisen.
New Era Optical Co., 123 W. Madison St., Chicago, Ill. "Anito."
Nonstrain—See Chicago Eye Shield Co.
Nosquint—See Strauss & Buegeleisen.
Nuform—See Strauss & Buegeleisen.
Optical Specialties Co., 132 Church St., New York, N. Y. "Snuggit."
Pennsylvania Optical Co., 125 S. Fifth St., Reading, Pa.

Resistal—See Strauss & Buegeleisen.
Sedan—See American Optical Co.
Segco—See Syracuse & Eldridge Glove & Lacing Co.
Shur On—See Kirstein Sons Co.
Siesel-Spill Mfg. Co., 19 Madison Ave., New York, N. Y. "Turtle."
Snuggit—See Optical Specialties Co.
Standard Optical Co., Geneva, N. Y. "Stoc Stoco—See Standard Optical Co.
Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Allwon," "Eyetelects," "Resistal," "Nosquint," "Nuform," "Fle shield," "Xyloshell."
Syracuse & Eldridge Glove & Lacing Co., 1108 Spring St., Syracuse, N. Y. "Segco."
Turtle—See Siesel-Spill Mfg. Co.
Willson Goggles, Inc., Second & Washington Sts., Reading, Pa. "Alberx," "Zylibax," "Xyloshell."
Xyloshell—See Strauss & Buegeleisen.
Yatman Rubber Co., 267-69 Mt. Pleasant Ave., Newark, N. J.
Zylibax—See Willson & Co.

GOGGLES, WELDERS—See Goggles, chanics

GONGS, MECHANICAL—See Bells, chanical

GOVERNORS, Engine

(For keeping the speed of a car below predetermined limits)

American Governor & Mfg. Co., Anderson, Ind.
Berdan Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.
Dell & Co., 1237 Majestic Bldg., Detroit, Mich. (See page 487.)
Duplex Engine Governor Co., 58 Bush Ave., Ext., Brooklyn, N. Y. "plex." (See page 457.)
Evans—See Hoffercker Co.
Hoffercker Co., Motor Mart Bldg., Boston, Mass. "Evans."
International Devices Co., 326 Broadway, New York, N. Y.
K. P. Products Co., 250 W. 54th St., New York, N. Y.
Monarch Governor Co., 1832-34 W. Be Ave., Detroit, Mich.
Pharo Mfg. Co., 1336 Woodward Ave., Detroit, Mich. (See page 459.)
Pierce Governor Co., Anderson, Ind. (See page 457.)
S-W-S Co., Minneapolis, Minn. (See page 457.)
Simplex—See Duplex Engine-Governor
Standard Governor Co., Rockford, Ill.

GOVERNORS, Engine, for Ford

(For keeping the speed of the car below predetermined limits)

Autoware Corp., 441 State St., Detroit, Mich. "Kant-Speed."
Berdan Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.
Cyclone—See Holland Brass Works.
Dell & Co., 1237 Majestic Bldg., Detroit, Mich. (See page 487.)

Everything is listed under the NOUN or principal word

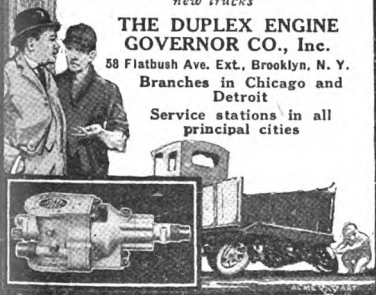
SERVICE
Duplex Simplex
 Double drive Single drive
GOVERNORS
STATION

Your Trucks Should be DUPLEX Equipped

1. They will last longer.
2. Keep out of the repair shop.
3. Keep on the job.
4. Make better average time.
5. Deliver more goods at less expense.
6. Use less gas and oil.
7. Competitive tests prove this.

Equip your trucks with **DUPLEX**
 Specify **DUPLEX** when ordering new trucks

THE DUPLEX ENGINE GOVERNOR CO., Inc.
 58 Flatbush Ave. Ext., Brooklyn, N. Y.
 Branches in Chicago and Detroit
 Service stations in all principal cities



PIERCE GOVERNORS

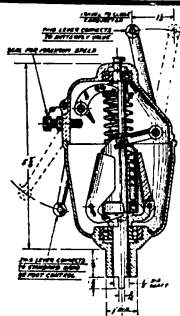
—Where
Performance Counts

More than one hundred and fifty Manufacturers of Motors, Trucks and Tractors furnish Pierce Governors as standard equipment.

Ask any of these Manufacturers why they chose Pierce Governors and they will tell you it was because they are *dependable*.

The Pierce Governor Company
 Anderson, Indiana

World's Largest Governor Builders

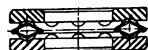
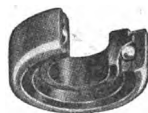
S-W-S VARISPEED GOVERNOR

for
Trucks—Tractors
 Controls Engine at
 All Speeds
 Under All Conditions
 Patent Applied For

S-W-S COMPANY

BEARINGS

Write for data
 sheets on our
 stock thrust,
 radial, and cup
 and cone ball
 bearings.



Minneapolis, Minn.

GOVERNORS

FOR

Fordson Tractors

SPECIAL APPLIANCE CORPORATION, Chicago, Ill.

Please mention The Automobile Trade Directory

GOVERNORS, Engine, for Fords (Continued)

Duplex Engine Governor Co., 58 Flatbush Ave. Ext., Brooklyn, N. Y. "Simplex." (See page 457.)
Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."
Kant-Speed—See Autoware Corp.
M. B. S. Mfg. Co., 117 Sixth Ave., Clinton, Ia.
Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.
Pierce Governor Co., Anderson, Ind. (See page 457.)
Simplex—See Duplex Engine-Governor Co.
Special Appliance Corp., Chicago, Ill. (See page 457.)
Standard Governor Co., Rockford, Ill.

GOVERNORS, ENGINE TRACTOR—See Governors, Tractor Engine

GOVERNORS, LOAD—See Motors, Truck-Load Indicating

GOVERNORS, Tractor Engine

American Governor & Mfg. Co., Anderson, Ind.
Berdin Mfg. Co., 1178 E. Grand Blvd., Detroit, Mich.
Dobson—See Northwest Mfg. Co.
International Devices Co., 326 Broadway, New York, N. Y.
K. P. Products Co., 250 W. 54th St., New York, N. Y.
Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.
Northwest Mfg. Co., 228-30 N. Fifth St., Minneapolis, Minn. "Dobson."
Pickering Governor Co., Pickering St., Portland, Conn.
Pierce Governor Co., Anderson, Ind. (See page 457.)
S-W-S Co., Minneapolis, Minn. (See page 457.)
Standard Governor Co., Rockford, Ill.
Superior—See Tractor Appliance Co.
Taco—See Tractor Appliance Co.
Tractor Appliance Co., Shelbyville, Ill. "Superior."
Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

GRAPHITE CYLINDER CUPS—See Lubricators, Cup Cylinder

GRAPHITE CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

GRAPHITE, Lubricating

(For Graphite Grease—See Greases, Oils and Gears)
Acheson Products—See Cassidy Co.
Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Dept. for Acheson Products, Niagara Falls, N. Y.)
Chester Graphite Co., Chester Springs, Pa.
Dixon Crucible Co., Joseph, Jersey City, N. J.
Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
Motorflake—See Superior Flake Graphite Co.
Oilzum—See White & Bagley Co.
Superior Flake Graphite Co., 76 W. Monroe St., Chicago, Ill. "Motorflake." (See page 459.)

United States Graphite Co., Saginaw, Mich.
White & Bagley Co., Worcester, Mass. "Oilzum." (See page 671.)

GRAVITY GAGES, SPECIFIC—See Gages, Specific Gravity

GRAVITY LUBRICATORS—See Lubricators, Motor Boat Gravity

GRAY IRON CASTINGS—See Castings, Gray Iron

GREASE BAGS—See Boots, Steering Knuckle

GREASE CUP WRENCHES—See Wrenches, Grease Cup

GREASE CUPS—See Cups, Oil and Grease

GREASE GUN LOADERS—See Loaders, Grease Gun

GREASE GUNS—See Guns, Grease; also Guns, Portable Carage Grease; also Systems, Chassis Lubricating

GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

GREASES, Cup and Gear

Acheson Products—See Cassidy Co.
Advance—See Lynch, Alonzo K.
Advance Grease Co., Jackson, Mich.
Albany—See Cook's Sons.
Alexander & Co., H. T., 17 Battery Pl., New York, N. Y. "Grand Prix."
Allegheny—See Roseberg Oil Co.
Amale—See Sonneborn Sons.
American Oil Co., American Bldg., Baltimore Md. "Eze-Lube," "Amoco."
American Oil Corp., S. Water St., Jackson Mich.
Amoco—See American Oil Co.
Anti-Friction Lubricant Co., E. Broad St., Joseph, Mich.
Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
Armour Oil & Chemical Co., Reserve Bldg., Kansas City, Mo.
Asbury Graphite Mills, Asbury, N. J.
Atlas—See Swan & Finch Co.
Aurora—See Pigot-Beyre Co.
Auto Oil Co., 172 S. Water St., Jackson, Mich.
Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 363.)
Badger—See Wadham's Oil Co.
Balcylene—See Balso Oil Co.
Balkan—See Jones & Bro., J.
Balso Oil Co., 238 N. Erie St., Toledo, O. "Balcylene."
Banner—See Clarkson & Ford Co.
Baum's Castorine Co., 104 N. George St., Rochester, N. Y.
Bayerson Oil Works—See Bock & Co.
Beats-All—See Auto Specialties Mfg. Co.
Berry's Sons, Jas. L., 11 Broadway, New York, N. Y.
Blison—See Swan & Finch Co.
Black Devil—See Frazer Lubricator Co.
Black Diamond—See Sweet, Charles F.

Everything is listed under the NOUN or principal word

"Superflake"—A Reliable Flake Graphite

A SUITABLE GRADE FOR EVERY PURPOSE



MOTORFLAKE

A selected grade of Superflake Graphite especially prepared and ground to an impalpable fineness, used on Automobiles, Motor Boats, Motor Cycles and all automotive equipment. Packed in cans, drums and barrels.



SUPERIOR FLAKE GRAPHITE CO.

Mines: ASHLAND, ALA. Offices & Warehouse: 76 W. Monroe St. CHICAGO, ILL.

PACKED

$\frac{3}{4}$, 1, 5 and 10 Pound Cans
25, 50, 100 Pound Kegs
Barrels or Sacks

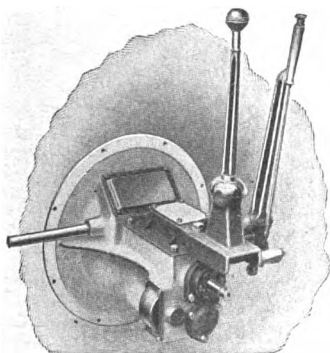
MUNCIE GEARS

Model T25 for Pleasure Cars and Light Trucks

Speed Reduction:

1st	2.6 to 1
2nd	1.7 to 1
3rd	1. to 1
Rev.	8.4 to 1

Gears 6-8 Pitch.



Muncie Gear Works
Muncie, Ind.

PHARO

Governors

—FOR—

TRUCKS and TRACTORS



THE PHARO MFG. CO.
1336 Woodward Ave.
Detroit, Mich.

DROP FORGINGS

Drawn Forgings of All Kinds.

Made from *Forging Quality* O. H. and Alloy Steels.

Heat Treated

Prompt and satisfactory service. Send blue prints for estimate.

The American Forge & Machine Company
1650 Barth Ave. Canton, Ohio

Please mention The Automobile Trade Directory

GREASES, Cup and Gear (Continued)

- Bliven & Carrington, 29 Moore St., New York, N. Y. "E. Z. Way," "Spermolene."
- Bock & Co., Harry E., Book Bldg., Detroit, Mich. (Sole Distributors for Bayerspn Oil Works, Erie, Pa. "Ebonite.")
- Borne, Strymer Co., 80 South St., New York, N. Y. "Colonial," "Silix," "Puritan."
- Bull Dog—See Climax Western Oil Co.
- Butler-Harley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
- Calypsol—See Swan & Finch Co.
- Camden Chemical Mfg. Co., 18th & Mickie Sts., Camden, N. J. "Greyhound."
- Carbo Oil Co., Cleveland, O.
- Cascade—See Swan & Finch Co.
- Cassco Bar-Metallic Packing Co., 3 S. Dearborn St., Chicago, Ill.
- Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Dept. for Acheson Products, Niagara Falls, N. Y.) "Gredag."
- Cataract Refining & Mfg. Co., Marine National Bank Bldg., Buffalo, N. Y. "Bison," "Calypsol," "Cascade."
- Chester Graphite Co., Chester Springs, Pa. "Hexagon."
- Chainolene Mfg. Co., 564 W. Randolph St., Chicago, Ill. "Purolene."
- Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Cinoco."
- Cinoco—See Cincinnati Oil Works Co.
- Clarkson & Ford Co., 55 Water St., New York, N. Y. "Banner."
- Climax—See Sweet, Charles F.
- Climax Lubricating Co., 318 N. 18th St., Philadelphia, Pa.
- Climax Western Oil Co., 3234 Tenth Ave., S., Minneapolis, Minn. "Bull Dog."
- Colonial—See Borne, Strymer Co.
- Columbia Refining Co., 90 West St., New York, N. Y. "K. A. C.," "Royal."
- Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.
- Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany," "Alpha."
- Crane & Co., 91 Oliver St., Boston, Mass. "Eureka."
- Cupese—See Swan & Finch Co.
- Cupolene—See Tide Water Oil Co.
- Currola—See Curry Bros. Oil Co.
- Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."
- Damascus Mfg. Co., 9501 Cassius Ave., Cleveland, O.
- Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.
- Detroit—See Zurn Co.
- Dilleys—See Lindsay, McMillan Co.
- Dixon Crucible Co., Joseph, Jersey City, N. J.
- Drake Oil Co., 99 E. Spring St., Titusville, Pa.
- Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.
- Duplex—See Enterprise Oil Co.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
- Duro-Mum—See Great Western Oil Co.
- Dutch—See Van Cleef Bros.
- E. Z. Way—See Bliven & Carrington.
- Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleline."
- Eagleline—See Eagle Oil & Supply Co.
- Ebonite—See Bock & Co.
- Economy—See Pennsylvania Lubricating Co.
- Emco—See Emery Mfg. Co.
- Emery Mfg. Co. Co., 48 Main St., Bradford, Pa. "Emco."
- Emlenton Refining Co., Emlenton, Pa.
- Empire—See Richardson Lubricating Co.
- En-Ar-Co—See National Refining Co.
- Ensign Refining Co., 10708 Quebec Ave., Cleveland, O.
- Enterprise Oil Co., 184 Chandler St., Buffalo, N. Y. "Duplex."
- Eureka—See Crane & Co.
- Evr-Lastin—See Imperial Oil Co.
- Excelsior—See Kellogg & Co.
- Excelsior—See Mills Oil Co.
- Eze-Lube—See American Oil Co.
- Famous Sales Co., 4234 S. Wabash Ave., Chicago, Ill. "Gear-Life."
- Faultless—See Hawkeye Oil Co.
- Ferrol—See Fiske Bros. Refining Co.
- Fiske Bros. Refining Co., 24 State St., New York, N. Y. "Ferrol."
- Frank Oil Co., 23 W. Spring St., Titusville, Pa.
- Frazer Lubricator Co., 3921 Normal Ave., Chicago, Ill. "Black Devil."
- Gearase—See Swan & Finch Co.
- Gear-Life—See Famous Sales Co.
- Gere-Lub—See Kentucky Consumers Oil Co.
- Gold Medal—See Monarch Mfg. Co.
- Gold Medal—See Stevenson Bro. & Co.
- Golden—See Great Western Oil Co.
- Grafene—See United States Graphite Co.
- Grand Prix—See Alexander & Co.
- Great Western Oil Co., 2855 E. 27th St., Cleveland, O. "Superior," "Golden," "Duro-Mum."
- Gredag—See Cassidy Co.
- Gree-No-Co—See Greenslade Oil Co.
- Green Seal—See Monarch Mfg. Co.
- Green Seal—See Phoenix Oil Co.
- Greenslade Oil Co., 455 W. Jefferson Ave., Detroit, Mich. "Gree-no-co."
- Greoli—See Robinson & Son Co.
- Greyhound—See Camden Chemical Mfg. Co.
- Gulf Refining Co., Pittsburgh, Pa. "Supreme."
- Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
- Harco—See Butler-Harley Co.
- Harris Oil Co., A. W., Providence, R. I. (See page 675.)
- Havoline—See Indian Refining Co.
- Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."
- Hercules—See Media Grease Co.
- Hexagon—See Chester Graphite Co.
- Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knightol."
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
- Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
- I-O-C—See Invader Oil Co.
- I. X. L.—See Kramer Co.
- Ideal—See Sheppard, W. S.
- Ideal—See Street & Co.
- Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Evr-Lastin."
- Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."
- Invader Oil Co., 76 Pearl St., New York, N. Y. "I-O-C."
- Invincible—See Millers Sons Co.
- Ironsides Co., Hartman Bldg., Columbus, O.

Everything is listed under the NOUN or principal word



Whatever gasket troubles repair men may have had before, they are over the moment **Wisoid Gaskets for Fords** are used.

Wisoid Gaskets are made of a new, exceedingly tough vegetable fibre which makes the ideal gasket for all water, oil, grease and gasoline joints.

No matter how long Wisod gaskets have been in service they come off whole, without scraping and go back in place unbroken, tight, as good as new.

No one who has ever tried Wisoid Gaskets will use others. Sold separately, or in a complete set and on metal display boards containing 25 each size. Order from nearest jobber listed below:

COLORADO
Denver
Dwyer Auto Goods Co.
Pueblo
Motor Acc't'y & Tire Co.

ILLINOIS

ILLINOIS
Duquello
 O. W. Condon Co.
Peoria
 Clark-Smith Hardware Co.
 Cummings & Emerson
 National Elec. & Auto
 Supply Co.
Quincy
 Reid Motor Hardware Co.

INDIANA
Evansville
Orr Iron Co.
Fort Wayne
Lement & Co.
National Mill Supply Co.
Indianapolis
Van Camp Hardware Co.

IOWA
Burlington
Motor Car Supply Co.
Robert Donahoe Iron &
Mfg. Co.
Cedar Falls
The Dayton Co.
Cedar Rapids
Cedar Rapids Pump Co.

Our Mateos
French Steamer Wisler
Dubuque
John Bernsdorf Iron Co.
Sioux City
Scheffe Auto Supply Co.
Sioux City Iron Co.

KANSAS
Atchison
Klostermeier Brothers
Hutchinson
Auto Supply Co.
Salina
The Watson-Weldon
Motor Sv. Co.

Topsa
Southwick Auto Sup. Co.
W. A. L. Thompson
Hardware Co.

Wichita
The Auto Devices Co.
The Johnson Brothers
Auto Sy. Co.

MASSACHUSETTS

MASSACHUSETTS
Boston
Ashton, Devere, Inc.
Eagle Auto Supply Co.
Hub Cycle Co.
Worcester
Alston & Goulding Co.

MICHIGAN
East Haven
Beard, Cammiller & Co.

Sagfrow
F. E. Doherty
MINNESOTA
Duluth
Kelley Duluth Mdwn. Co.
Kelley-Haw-Thomson Co.

Kelly-Haw-Thomson Co.
Minneapolis
Minneapolis Iron Store
Reinhard Bros.
Western Motor Supply Co.
St. Paul
C. J. Smith & Co.
Farwell-Osman-Kirk & Co.

Kansas City
Fidelity Auto Supply Co.
Minneapolis
Motor Car Supply Co.
St. Joseph
Wyeth Hdw. & Mfg. Co.
Springfield
Hermann-Sanford Rad. Co.
Quack Motor Supply Co.

Quark Motor Supply Co.
Southwest Automobile &
Sy. Co.

NEW JERSEY
Newark
Ferry Sales Co.

NEW YORK
Albany
Albany Hdw. & Iron Co.

Brooklyn
 Martin Evans Co.
 Buffalo
 W. Bergman Mfg. Co.
 United Accessories Corp.
 Jamestown
 Jamestown Mfg. Co.

Jamestown Hdw. Co.
 Milwaukee
 Walters Rubber Co., Inc.
 New York City
 W. E. Pruden Hdw. Co.
 Whittemore-Sim Co., Inc.
 Weaver-Eberling Auto. Co.
 Rochester
 Rochester Automotive

Equipment Corp.
W. H. Reverdish & Son
Syracuse
Otis Co., Inc.
Onondaga Auto Sup. Co.
Thousand
Dolbrech-Leach Access'y Co.
Utica

Perry & Sherman, Inc.
Utica Cycle & Supply Co.
NORTH CAROLINA
Rocky Mount
Daise Sales Co.
NORTH DAKOTA
Grand Forks
Auto Supply Co.

OHIO
Columbus
Justus & Parker Co.
Smith Brothers Hdw. Co.
Dayton
Dayton Iron & Steel Co.
Greenville
York Auto Supply Co.

York Auto Supply Co.
PENNSYLVANIA
 Allentown
 Allentown Auto Sup. Co.
 The Motor Accessory Co.
 Altoona
 Central Supply Co.
 Easton
 Way, Beahrs

Greenville
Monte Wright Co.
Lancaster
General Auto Supply Co.
Queen Auto Supply Co.
Harrisburg
Front Market Motor Sup-
ply Co.
-Hackett

Jere. Woodring & Co.
 Philadelphia
 Gaul. Herr & Shriver Co.
 Miller Excet Co
 H C Roberts Excet Sy Co
 Pittsburgh
 Jackson Motor Supply Co
 Pittsburgh Auto Equip Co.
 Jas. Woodruff Co.

RHODE ISLAND
Providence
Belcher & Leonard Mfg. Co.
Goodby, Rankin Co.
Millers, Inc.

Miller, Inc.
 Waite Auto Supply Co.
SOUTH DAKOTA
 Aberdeen
 Spaulding Supply Co.
 Sioux Falls
 L. & L. Motor Supply Co.
WISCONSIN

Edou Chaire
Clemens Auto Supply Co.

DISTRICT OF COLUMBIA
Washington
Davis & Child
Hines Auto Supply Co.

CANADA
Toronto
Cullen Foster, Ltd.
Winnipeg
Miller-McCue Lumber Co.
Ltd.
Meacham Products, Ltd.
Ottawa
West Sault Ste. Marie Co.
Ltd.

1

1

**Sales Department**

HORACE H. ECKHOUSE

1834 Broadway, New York

Manufactured by

Consolidated Packing & Supply Co.

Please mention The Automobile Trade Directory

GREASES, Cup and Gear (Continued)

- Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."
- K. A. C.—See Columbia Refining Co.
- Kellogg & Co., E. H., 243-44 South St., New York, N. Y. "Excelsior."
- Kelly Graphite Mills, 351 W. 26th St., New York, N. Y.
- Kenco—See Kendall Refining Co.
- Kendall Refining Co., Bradford, Pa. "Royal," "Kenco."
- Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Gere-Lub."
- Keystone Lubricating Co., 11st & Clearfield Sts., Philadelphia, Pa.
- Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.
- Knightol—See Hobson Oil Co.
- Kramer Co., W. J., 214-16 Read St., Milwaukee, Wis. "I. X. L."
- La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
- Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.
- Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.
- Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
- Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Lubrya."
- Loos & Dilworth, 154 S. Front St., Philadelphia, Pa. "Pioneer."
- Lubriko Co., Meadow & Jackson Sts., Philadelphia, Pa.
- Lubrophite Oil Products Co., 1515-17 W. Sixth St., Cincinnati, O.
- Lynch, Alonzo K., 810-12 Flushing Ave., Brooklyn, N. Y. "Advance."
- McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swajiska."
- Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
- Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magolene."
- Magolene—See Magnolia Petroleum Co.
- Manhattan Oil Co., 592 Vandalla St., St. Paul, Minn. "New Process."
- Marshall Oil Co., Marshalltown, Ia. "Moco," "Rex."
- Master—See Pure Oil Co.
- Media Grease Co., Media, Pa. "Hercules."
- Micanlake—See U. S. Mica Mfg. Co.
- Middle States Oil Co., Engineers Bldg., Cleveland, O.
- Millers Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Invincible."
- Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."
- Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.
- Mobilubricant—See Vacuum Oil Co.
- Moco—See Marshall Oil Co.
- Monamobile—See Monarch Mfg. Co.
- Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Gold Medal," "Green Seal," "Monamobile."
- Monogram—See New York Lubricating Oil Co.
- Motor Mica Products Co., 556 Washington Blvd., Chicago, Ill. "Twentieth Century."
- Motorlube—See Tygart Co.
- Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.
- National Oil & Supply Co., 180 Freylinghuysen Ave., Newark, N. J. "Viscos."
- National Refining Co., Rose Building, Cleveland, O. "En-Ar-Co."
- Navarre Oil Co., 8800 Nevada Ave., Cleveland, O.
- New Process—See Manhattan Oil Co.
- New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
- New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Non-Fluid."
- Nobett—See Sawyer Oil Co.
- Non-Fluid—See New York & New Jersey Lubricant Co.
- Nusco—See Sun Co.
- Ohio Grease Co., Box 21, Loudonville, O. (See page 271.)
- O'Neill Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."
- Oil City Oil & Grease Co., Seneca St., Oil City, Pa.
- Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.
- Oilsum—See White & Bagley Co.
- Ottomo—See Pioneer Mfg. Co.
- Palubco—See Pennsylvania Lubricating Co.
- Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
- Panhard Oil Corp., 395 Broadway, New York, N. Y.
- Paragon Refining Co., 2935 Front St., Toledo, O. "Polar."
- Paramount—See Schibling, Frederick.
- Parker Refining Co., 1207 W. 11th St., Cleveland, O.
- Patterson Lubricating Co., 114 Broad St., Boston, Mass.
- Penn.—See Pennsylvania Lubricating Co.
- Penn. Petroleum & Supply Co., 1234-30 Wasington Ave., Philadelphia, Pa. "Primus."
- Pennsylvania Lubricating Co., 24th St. & A. Ry., Pittsburgh, Pa. "Penn," "Sylvan," "Economy," "Palubco."
- Perfection—See Wood Co.
- Perfecto—See Young & Kimball.
- Perry Oil Co., 373 Central Ave., Pawtucket, R. I.
- Petroleum Products Co., 29th St. & B. & R. R., Pittsburgh, Pa. "Sound-Proof."
- Philadelphia Grease Mfg. Co., 848-50 S. Washington St., Philadelphia, Pa.
- Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."
- Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Green Seal."
- Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."
- Pioneer—See Loos & Dilworth.
- Pioneer Mfg. Co., 10309 Harvard Ave., Cleveland, O. "Ottomo."
- Polar—See Paragon Refining Co.
- Polarine—See Standard Oil Co. of N. Y.
- Primol Products Corp., Philadelphia, Pa.
- Primus—See Penn. Petroleum & Supply Co.
- Pure Oil Co., 1306 First St. S., Minneapolis, Minn. "Puritan," "Master."
- Puritan—See Pure Oil Co.
- Puritan—See Borne, Sorymsner Co.
- Puritan Oil & Paint Co., 1218 W. 70th Cleveland, O.
- Purolene—See Chainolene Mfg. Co.
- Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.
- Quaker State—See Phinney Bros. Co.
- Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
- Redline—See Union Oil Co. of California.
- Rex—See Marshall Oil Co.
- Richardson Lubricating Co., Front & N. Sts., Quincy, Ill. "Empire."
- Rie-Nie—See Durkee-Atwood Co.
- Robertson Lubricants Co., 21st & J. Sts., Philadelphia, Pa. (See page 1.)
- Robinson & Son Co., Wm. C., 32 South Baltimore, Md. "Greoli."

Everything is listed under the NOUN or principal word

WARREN GEAR PRODUCTS COMPANY

Warren, Pa.

**Differentials—Transmissions
Complete Gear Assemblies**

Transmission

Differentials

GEARS - SHAFTS

FLYWHEEL - STARTER - GEAR RINGS



"Every DOUBLE DIAMOND Gear Is a Nickel Steel Gear"

AUTOMOTIVE GEAR WORKS, Atlanta, Ga.

Distributors:

AUTO GEAR CO.
844 Eighth Ave.
New York

AUTO GEAR CO.
1425 S. Michigan Ave.
Chicago

AUTO GEAR CO.
1213 S. Hope St.
Los Angeles

AUTO GEAR CO.
1151 Commonwealth Ave.
Boston

You Don't Realize How Much Money You Are Losing by Not Buying

AXLE and PINION SHAFTS
FOR ALL MAKES OF CARS

FROM

Detroit Motor Parts Company

133-5 W. Larned Street

DETROIT

GET OUR PRICE LIST AND DISCOUNTS TO THE TRADE

Please mention The Automobile Trade Directory

GREASES, Cup and Gear (Continued)

Rome—See Howard Lubricants Co.
 Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allegheny."
 Royal Petroleum Co., 204 E. 74th St., New York, N. Y.
 Royal—See Columbia Refining Co.
 Royal—See Kendall Refining Co.
 Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Nobetr."
 Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."
 Shamrock—See Sinclair Refining Co.
 Shappell Petroleum Products Co., N. West St. Rd., Lima, O.
 Sheppard, W. S., 21 Lawrence St., Newark, N. J. "Ideal."
 Silox—See Borne, Scrymser Co.
 Sinclair Refining Co., Chicago, Ill. "Shamrock." (See page 677.)
 Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
 Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
 Sound-Proof—See Petroleum Products Co.
 Speare's Sons Co., Alden, 140 Sixth St., Boston, Mass.
 Spedolene—See Tide Water Oil Co.
 Speedway—See Red "C" Oil Mfg. Co.
 Spermolene—See Blinen & Carrington.
 Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Polarine."
 Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Gold Medal."
 Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."
 Street & Co., J. D., 41st St. & Park Ave., St. Louis, Mo. "Ideal."
 Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
 Sun Co., Finance Bldg., Philadelphia, Pa. "Nusac."
 Superba—See Curry Bros. Oil Co.
 Superior—See Great Western Oil Co.
 Superior Oil Co., 1426 W. Third St., Cleveland, Ohio.
 Supreme—See Gulf Refining Co.
 Sutherland & Co., P. 232 Milk St., Boston, Mass. "Velvet."
 Swan & Co., Alden B., 135 Front St., New York, N. Y. "Swanovia."
 Swan & Finch Co., 165 Broadway, New York, N. Y. "Atlas," "Gearcase," "Cupese."
 Swanovia—See Swan & Co.
 Swastika—See McLean-Jones Oil & Supply Co.
 Sweet, Charles F., 247 State St., Hartford, Conn. "Climax," "Black Diamond."
 Syco Gear Kling—See Symonds Co.
 Sylvan—See Pennsylvania Lubricating Co.
 Symonds Co., Joseph H., Westfield, Mass. "Syco Gear Kling."
 Texaco—See Texas Co.
 Texas Co., 17 Battery Pl., New York, N. Y. "Texaco," "Thuban."
 Thermo—See Haggerty Refining Co.
 Thuban—See Texas Co.
 Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Veedol," "Spedolene," "Cupolene." (See page 673.)
 Tilton Lubricants Co., 1220 San Pedro St., Los Angeles, Cal.
 Townsend Co., W. E., 137 W. 56th St., New York, N. Y. (Distributors.) (See page 347.)

Tulo—See Universal Lubricating Co.
 Twentieth Century—See Motor Mica Products Co.
 Tygert Co., E. A., 126 N. Front St., Philadelphia, Pa. "Motorlube."
 Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal. "Redline."
 Union Petroleum Co., Widener Bldg., Philadelphia, Pa.
 Unity—See Curry Bros. Oil Co.
 United States Graphite Co., Saginaw, Mich. "Grafene."
 Universal—See Young & Kimball.
 Universal Lubricating Co., Schofield Bldg., Cleveland, O. "Tulc."
 Vacuum Oil Co., 61 Broadway, New York, N. Y. "Mobilubricant."
 Valvoline Oil Co., 11 Broadway, New York, N. Y.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Veedol—See Tide Water Oil Co.
 Velvet—See O'Neil Oil & Paint Co.
 Velvet—See Sutherland & Co.
 Velvet—See Winne, Howard B.
 Veracity—See Warren Refining & Chemical Co.
 Visco Motor Oil Co., 3104 Superior Ave., N. W. Cleveland, O.
 Viscos—See National Oil & Supply Co.
 Viscosity Oil Co., 1101-03 W. 37th St., Chicago, Ill.
 Wadhams Oil Co., 359 Clinton St., Milwaukee, Wis. "Badger."
 Warren Refining & Chemical Co., Cleveland, O. "Veracity."
 Waverly Oil Works Co., Pittsburgh, Pa. (See page 671.)
 Western Chemical Mfg. Co., 151 Sixth St., Milwaukee, Wis. "Owl."
 White & Bagley Co., Worcester, Mass. "Oilzum." (See page 671.)
 Whitmore Mfg. Co., 33 Iron Ct., Cleveland, Ohio.
 Whis—See Hollingshead Co.
 Wilhelm Oil Co., 2361 Hampden Ave., St. Paul, Minn. "Willoco."
 Wiloco—See Wilhelm Oil Co.
 Winn, Wm. R., 148 Maiden Lane, New York, N. Y.
 Winne, Howard B., 714 W. Jackson Bldg., Chicago, Ill. "Velvet."
 Wolverine Lubricants Co., 44 Whitehead St., New York, N. Y. (See page 673.)
 Wonder Worker—See Hall-Thompson Co.
 Wood Co., W. A., 373 Atlantic Ave., Boston, Mass. "Perfection."
 Xylite—See Stock Xylite Grease & Oil Co.
 Youkim—See Young Co.
 Young Co., Frank L., 111 Purchase St., Boston, Mass. "Youkim."
 Zone Oil Co., W. 11th St., Cleveland, O.
 Zurn Co., O. F., 2736-38 N. Broad St., Philadelphia, Pa. "Detroit."

GRIDS, CAMP STOVE—See Stoves, Cast

GRINDER HEADS—See Heads, Grinder

GRINDERS, LATHE—See Attachments
 Lathe Cylinder Grinding

GRINDERS, Chucking

Bryant Chucking Grinder Co., 257 Clinton Springfield, Vt.

Everything is listed under the NOUN or principal word

FENDERS

MANUFACTURERS:

SERVICE in fulfilling your sheet metal requirements is our aim. You incur no obligation in sending us the specifications for FENDERS, HOODS, SPLASH APRONS, and FUEL TANKS on your passenger car, truck or tractor.

DISTRIBUTORS and DEALERS:

REPLACEMENT FENDERS for BUICK Cars for Models 1917 to 1920, inclusive, carried in stock.

Write for our prices and become
a satisfied customer

The high grade of our ENAMELED products pleases the car manufacturer, distributor, dealer and owner alike.

**The Fostoria Pressed Steel
Company**
FOSTORIA, OHIO

EGYPTIAN FIBRE

For High Electrical Resistance

EGYPTIAN FIBRE is best for all insulation purposes, owing to its high electrical resistance.

EGYPTIAN FIBRE can be had in any special shape: in sheets, rods and tubes.

You can mill, thread, tap, turn, drill, press, shear, punch or knurl it.

Let us send you a sample. Write us today.

DELAWARE HARD FIBRE COMPANY
WILMINGTON, DEL.

NEW YORK
50 Church Street

CHICAGO
564-570 W. Monroe Street



FELT

**WASHERS, PADS
and GASKETS for
AUTOMOBILES**

Cut According to
Your Specifications
Any Shape, Size—All Weights

WASHERS and GASKETS
for Ford Cars in Stock

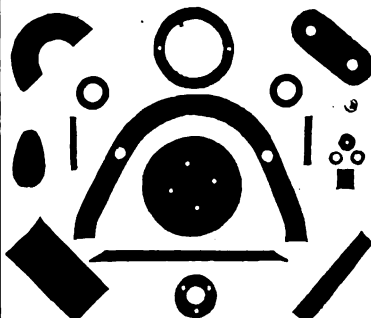
It Will Pay You to Get Our Prices
Before Ordering

We Guarantee Perfect Satisfaction

LYONS FELT CO.
Dept. A
338 Myrtle Ave., Brooklyn, N.Y.

CUT FELTS

OF EVERY DESCRIPTION



Window Slide Channel Felt

WASHERS	PLUGS
WICKS	DISCS
GASKETS	WHEELS
PACKING	ALL SPECIAL
STRIPS	CUTTING

THE FELTERS CO., Inc.
CUTTING FACTORY
MILLBURY, MASS.

WE MANUFACTURE THE FELT

Please mention The Automobile Trade Directory

GRINDERS, Crank Pin

Landis Tool Co., Waynesboro, Pa.
(See page 469.)

Norton Grinding Co., New Bond St., Worcester, Mass.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)

Tindel-Albrecht—See Tindel-Morris Co.

Tindel-Morris Co., Eddystone, Pa. "Tindel-Albrecht."

GRINDERS, CUTTER — See Grinders, Reamer and Cutter

GRINDERS, Cylinder

(For Cylinder Grinding Lathes Attachments—See Attachments, Lathes Cylinder Grinding)

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cincinnati Electrical Tool Co., 1501-03 Freeman Ave., Cincinnati, O.

Eagle Motor Works, 141 E. Franklin St., Minneapolis, Minn.

Heald Machine Co., Worcester, Mass.
(See page 471.)

Lafayette Tool & Equipment Co., 21 S. 12th St., Philadelphia, Pa.

Madison Machine Tool Co., 1245 E. Washington Ave., Madison, Wis.
(See page 483.)

Micro—See Schmidt Co.

Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia. "Micro."

Vulcan Appliance Co., 512-14 Bank Bld., Denver, Colo.

Whitney & Son, Baxter D., Winchendon, Mass. (See pages 467 and 841.)

GRINDERS, Disc

Badger Tool Co., Fifth & Portland Sts., Beloit, Wis.

Besly & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Gardner Machine Co., 410 Bushnell St., Beloit, Wis.

Hoysradt & Case, 131 Cornell St., Kingston, N. Y.

Modern Pattern & Machine Co., 451-53 Monroe Ave., Detroit, Mich.

Ramson Mfg. Co., 320 Eighth St., Oshkosh, Wis.

Rowbottom Machine Co., Waterbury, Conn.

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

GRINDERS, Drill

Grand Rapids Grinding Machine Co., 33 Ottawa Ave., N. W., Grand Rapids, Mich.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

New Yankee—See Wilmarth & Morman Co. Sellers & Co., Wm., 1600 Hamilton St., Philadelphia, Pa.

Washburn Shops, Boynton St., Worcester, Mass. "Worcester."

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "New Yankee."

Worcester—See Washburn Shops.

GRINDERS, ELECTRIC PORTABLE—See Drills, Electric Portable

GRINDERS, Internal

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Churchill-Morgan-Crittlinger, 393 Main St., Worcester, Mass.

Cincinnati Grinder Co., Colerain & Alabama Aves., Cincinnati, O.

McCulloch Machine Co., A. P., 216 High St., W. Germantown St., Dayton, O.

Heald Machine Co., Worcester, Mass.
(See page 471.)

Landis Tool Co., Waynesboro, Pa.
(See page 469.)

Lansing Stamping Co., Lansing, Mich.

Micro—See Schmidt Co.

Modern Tool Co., State & Second Sts., Erie, Pa.

Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.

Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia. "Micro."

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.

Van Norman Machine Tool Co., 150 Wilbraham Ave., Springfield, Mass.

GRINDERS, Piston Ring

Alert—See Harding, S. B.

Harding, S. B., Waukesha, Wis. "Alert."

Heald Machine Co., Worcester, Mass.
(See page 471.)

Walker Co., O. S., Rockdale St., Worcester, Mass.

GRINDERS, Plain Tool

American Grinder Mfg. Co.—See Jonas, C. N. & F. W.

Athol Machine Co., Athol, Mass.

Battle Axe—See Fry Mfg. Co.

Mount Co., J. G., Everett, Mass.
(See page 475.)

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Builders Iron Foundry, 9 Codding St., Providence, R. I.

Clizbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind.

Columbia Mfg. Co., Belleville, Ill.

Diamond Machine Co., 9 Codding St., Providence, R. I.

Ferodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."

Ferro—See Ferodowill Mfg. Co.

Fitchburg Grinding Machine Co., 76 Winter St., Fitchburg, Mass.

Fry Mfg. Co., R. L., 2224 N. Ninth St., St. Louis, Mo. "Battle Axe."

Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for American Grinder Mfg. Co., Milwaukee, Wis.)

Johnson—See U. S. Electrical Mfg. Co.

La Salle Tool Co., 505 Second St., La Salle, Ill.

Landis Tool Co., Waynesboro, Pa.
(See page 469.)

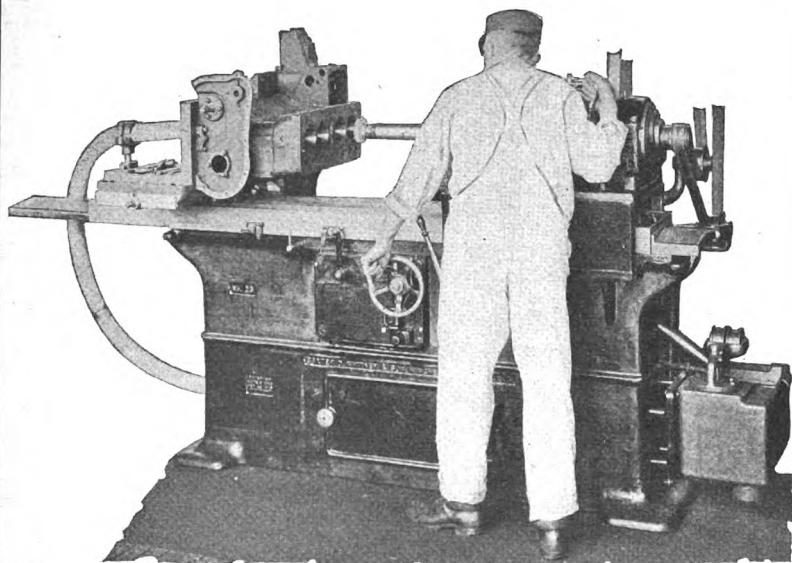
Luther Grinder Mfg. Co., Milwaukee, Wis.

Modern Tool Co., State & Second Sts., Erie, Pa.

Everything is listed under the NOUN or principal word

Whitney Cylinder Grinder

For grinding all kinds of gasoline engine cylinders as well as work too large or too heavy to revolve.



No. 23 Cylinder Grinder at work regrinding automobile cylinders

Machines furnished to grind holes 3" up to 7" diameter and 14" deep. Also equipped to grind holes as large as 14" diameter and 25" deep.

Let us send you our new Booklet. Write for it.

BAXTER D. WHITNEY & SON, Inc.
Winchendon, Mass., U. S. A.

Domestic Agents: Machine Tool Engineering Co., New York City. E. A. Kinsey Co., Cincinnati, Ohio. Strong, Carlisle & Hammond Co., Cleveland, Ohio, and Detroit, Mich. The Motch & Merryweather Machinery Co., Pittsburgh, Pa. Sherritt & Stoer Co., Philadelphia, Pa. Carey Machinery & Supply Co., Baltimore, Md. Pacific Coast Agents: Pacific Tool & Supply Co., San Francisco, Calif. Portland Machinery Co., Portland, Ore. Perine Machinery Co., Seattle, Wash. W. H. Savage, Fitchburg, Mass.; Colcord-Wright Mch. & Supply Co., St. Louis, Mo. **Canadian Agents:** Canadian Fairbanks-Morse Co., Montreal, P. Q. **Foreign Agents:** Buck & Hickman, Ltd., London, England, Fenwick Co., Paris, France.

Please mention The Automobile Trade Directory

GRINDERS, Plain Tool (Continued)

National Aome Co., Cleveland, O.
(See page 667.)
Norton Grinding Co., New Bond St., Worcester, Mass.
Oesterlein Machine Co., 3850 Spring Grove Ave., Cincinnati, O. "Ohio."
Ohio—See Oesterlein Machine Co.
Partridge, E. O., 2047 W. Lake St., Chicago, Ill.
Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.
Royersford Foundry & Machine Co., Royersford, Pa.
St. Louis Machine Tool Co., 322-32 Loughborough Ave., St. Louis, Mo.
Stapf & Co., John B., Dunkirk, N. Y.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor."
Taylor—See Tabor Mfg. Co.
U. S. Electrical Mfg. Co., Third & Central, Los Angeles, Cal. "Johnson."
(See page 469.)
Valley City Machine Works, 12-16 Campus Ave. N. W., Grand Rapids, Mich.
W & P—See Webster & Perks Tool Co.
Walker Grinder Co., Worcester, Mass.
Webster & Perks Tool Co., Springfield, O.

GRINDERS, Reamer and Cutter

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Clough, R. M., Tolland, Conn.
Grand Rapids Grinding Machine Co., 33 Ottawa Ave. N. W., Grand Rapids, Mich.
Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.
Greenfield Tap & Die Corp., Greenfield, Mass. (See page 915.)
Harris Engineering Co., H. E., 1041-55 Broad St., Bridgeport, Conn.
Ingersoll Milling Machine Co., Douglas & Wilmoughby Sts., Rockford, Ill.
Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.
Oesterlein Machine Co., 3850 Spring Grove Ave., Cincinnati, O. "Ohio."
Ohio—See Oesterlein Machine Co.
Thompson Grinder Co., 604 E. Main St., Springfield, O.
Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
Walker Co., O. S., Rockdale St., Worcester, Mass.
Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.
Woods Engineering Co., 108 E. Patterson St., Alliance, O.

GRINDERS, RING—See Grinders, Piston Ring**GRINDERS, Surface**

Blanchard Machine Co., 64 State St., Cambridge, Mass.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Clough, R. M., 327 Colony St., Meriden, Conn.
Diamond Machine Co., 9 Coddling St., Providence, R. I.
Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Heald Machine Co., Worcester, Mass.
(See page 471.)
La Salle Tool Co., 505 Second St., La Salle, Ill.
Landis Tool Co., Waynesboro, Pa.
(See page 469.)
Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.
Thompson Grinder Co., 604 E. Main St., Springfield, O.
Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
Valley City Machine Works, 12-16 Campus Ave. N. W., Grand Rapids, Mich.
Walker Co., O. S., Rockdale St., Worcester, Mass.
Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

GRINDERS, Swing Frame

Pittsburg Grinding Wheel Co., Rochester, Pa.
Safety Emery Wheel Co., Springfield, O.
Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.
Tucker Machine Co., 222 E. Ninth St., Cincinnati, O.

GRINDERS, Timer for Fords

McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 471.)

GRINDERS, TOOL—See Grinders, Plain Tool; also Grinders, Wet Tool**GRINDERS, Universal**

American Tool & Machine Co., 10 High St., Boston, Mass.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Cincinnati Grinder Co., Colerain & Alabama Aves., Cincinnati, O.
Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.
Lafayette Tool & Equipment Co., 21 S. 12th St., Philadelphia, Pa.
Landis Tool Co., Waynesboro, Pa.
(See page 469.)
Modern Tool Co., State & Second Sts., Erie, Pa.
Norton Grinding Co., New Bond St., Worcester, Mass.
Oakley Machine Tool Co., Marburg Ave. & B. & O. R. R., Cincinnati, O.
Ott Grinder Co., 217-23 W. Tenth St., Indianapolis, Ind.
Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
Taft-Peirce Mfg. Co., Woonsocket, R. I.
Thompson Grinder Co., 604 E. Main St., Springfield, O.
Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
Wilmarth & Morman Co., 1179 Monroe Ave., Madison, Wis.

GRINDERS, VALVE—See Machines, Valve Seating; also Tools, Valve Grinding**GRINDERS, Wet Tool**

Blount Co., J. G., Everett, Mass.
(See page 475.)
Bridgeport Safety Emery Wheel Co., 32 Knowlton St., Bridgeport, Conn.

Everything is listed under the NOUN or principal word

LANDIS

GRINDING MACHINES

We can completely equip any gas engine or automobile grinding department.

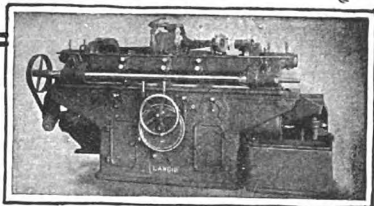
Our Line Crankshaft Grinding Machines, Plain Grinding Machines, Universal Grinding Machines, Internal Grinding Machines, Ball Race Grinding Machines, in different sizes, are suitable for grinding all parts of gas engines usually finished by grinding.

LANDIS TOOL COMPANY

Main Office and Factory, Waynesboro, Pa.

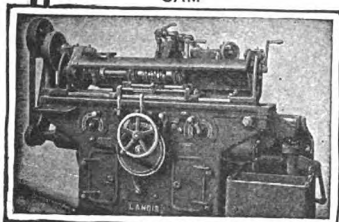
New York Office

50 Church Street

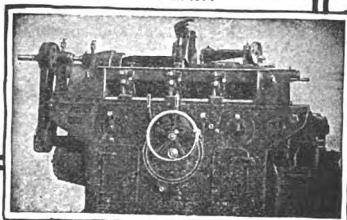


CRANK

CAM

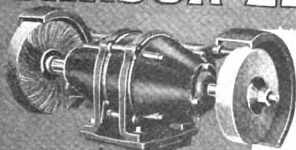


PLAIN



BIGGER PROFITS for TIRE MEN

Why do the biggest Tire Shops use
JOHNSON ELECTRIC BUFFERS?



Liberal size
ball bearings;
Dust - proof
mountings;
Heavy, sturdy
shaft.

Request
literature
and prices.
Distributors:
Ask for
Proposition.



LEADING Tire Vulcanizing Shops and tire companies throughout the country rely on Johnson Buffers to do preparation work quickly and cleanly, at a minimum power and labor cost. The Fisk Rubber Company says: "Giving us great satisfaction, both in work accomplished and lack of attention required." We have dozens of letters from successful tire shops highly praising the Johnson.

Increases Efficiency Four Times

You can cut down your labor costs and be assured of bigger profits with this buffer. We can prove it. Look at the illustration. All parts are guarded and housed. Sturdy, compact; occupies smallest space. No noisy, slipping, dangerous belts. The motor is of special design built for buffer service.

Mfgd. by **U.S. ELECTRICAL MFG. CO.**
Third & Central - Los Angeles, Calif.

GRINDERS, Wet Tool (Continued)

Diamond Machine Co., 9 Coddling St., Providence, R. I.
 Glaholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Hoyeradt & Case, 131 Cornell St., Kingston, N. Y.
 Lutter & Gies Co., 255 Lake St., Milwaukee, Wis. "Milwaukee."
 Milwaukee—See Lutter & Gies.
 Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.
 Sellers & Co., Wm., 1606 Hamilton St., Philadelphia, Pa.
 Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.
 Sterling Grinding Wheel Co., Tiffin, O. (See page 1057.)
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Tucker Machine Co., 123 E. Ninth St., Cincinnati, O.
 Valley City Machine Works, 13-16 Campau Ave., N. W., Grand Rapids, Mich.
 W & P—See Webster & Perks Tool Co.
 Western Tool & Mfg. Co., Springfield, O.
 Webster & Perks Tool Co., Springfield, O. "W & P."

GRINDING COMPOUNDS—See Compounds, Valve Grinding

GRINDING WHEELS—See Wheels, Grinding

GRIPS, Airplane Rubber

Dural Rubber Corp., Maple Ave., Flemington, N. J.

GRIPS, HAND—See Protectors, Door

GRIPS, NON-SKID—See Chains or Grips, Non-Skid; also Bands, Non-Skid

GRIPS, Pedal

(Rubber pads for applying to clutch and brake pedals to prevent feet from slipping)

Allen—See Cushion Pedal Co.
 Auto Pedal Pad Co., 318-20 W. 52d St., New York, N. Y. "Perfection."
 Brickley, R. S., Aberdeen, S. Dak.
 Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
 Cushion Pedal Co., 287 San Fernando Blvd., Los Angeles, Cal. "Allen."
 (See page 471.)
 Dickson Auto Parts Co., 1 Columbus Circle, New York, N. Y.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Hadco—See Hadden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco."
 (See page 821.)
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 Neverslip—See Rives Mfg. Co.
 Perfection—See Auto Pedal Pad Co.
 Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rives Mfg. Co., Geo. H., Woolworth Bldg., New York, N. Y. "Neverslip."

Thermold Rubber Co., Trenton, N. J. (See page 551.)

Williams Soft Pedal Co., Chamber of Commerce Bldg., Cedar Rapids, Iowa.

GRIPS, Pedal, for Fords

(Rubber pads for applying to pedals to prevent feet from slipping)

Allen—See Cushion Pedal Co.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Auto Pedal Pad Co., 318-20 W. 52d St., New York, N. Y. "Perfection."
 Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill. "Fullfoot."
 Cushion Pedal Co., 287 San Fernando Blvd., Los Angeles, Cal. "Allen."
 (See page 471.)
 Dickson Auto Parts Co., 1 Columbus Circle, New York, N. Y.
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y. "Safety-First."
 Fullfoot—See Cloud Accessories Corp.
 Grant Auto Appliance Co., 315 S. Clinton St., Chicago, Ill. "Surety."
 Hill Pump Valve Co.—See Zinke Co.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 Neverslip—See Rives Mfg. Co.
 Perfection—See Auto Pedal Pad Co.
 Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Slip-Knot."
 (See page 701.)
 Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rives Mfg. Co., Geo. H., Woolworth Bldg., New York, N. Y. "Neverslip."
 Safety-First—See Ever-Right Products Corp.
 Slip-Knot—See Racine Accessories Mfg. Co.
 Stadco—See Stadeker Metal Specialty Co.
 Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
 Surety—See Grant Auto Appliance Co.
 Utility—See Zinke Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility," "Sure Grip.") (See page 687.)

GRIPS, Spark and Throttle Lever

(Rubber or Composition Grips or Handles for Spark and Throttle Levers)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

GRIPS, Spark and Throttle Lever, for Fords

General Appliance Co., 100 Boylston St., Boston, Mass.
 Hasco—See Howard Auto Specialties Co.
 Howard Auto Specialties Co., Swampscott, Mass. "Hasco."
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.

GRIPS, STEERING WHEEL—See Covers, Steering Wheel Rim

Everything is listed under the NOUN or principal word

YOU WILL APPRECIATE McCULLOCH PRODUCTS

The name "McCulloch" on automobile ignition parts signifies products made by engineers in a machine and tool shop. Once used always used, because they are dependable.

McCulloch Wipe Contact



Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

List 90c

McCulloch Timer Grinder



Will grind the worn-out timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

List \$21; \$25 with Attachments

Specialists in Ford Ignition
216 High St., Boston, Mass.

McCulloch Timer



A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

List \$2

McCulloch Manufacturing Co.

Grinding Machines

We manufacture a machine especially designed to grind the bore of cylinders or any large, awkward-shaped casting.

Our internal grinders finish the holes in gears, connecting rods, ball races, etc. It is also valuable in tool rooms for gauges, dies or bushings, grinding either straight or tapered holes.

Piston rings or any flat work which requires facing is best handled on our surface grinders, 8", 12" and 16" size.

No other method of chucking the work is as rapid or successful as with a Heald Magnetic Chuck. Built in all sizes, rotary or rectangular shape.

We will be favored if we can furnish you literature.

THE HEALD MACHINE CO., Worcester, Mass.

Branch Offices in all Principal Cities

Generator Tubing
Gaskets
Pedal Pads
Pedal Pads for Fords
Weather Strips
Rubber Tubing (acid proof)
Bumpers (rubber)
Washers (tire pumps)
Cement Rubber
Repair Patches
Special rubber goods
molded to blue print

Industrial Rubber Goods Co.

Broad St., St. Joseph, Mich.

PEDAL PADS, Price \$1.50 per set
HEEL PLATES, Price \$1.00 each

COMFORT SAFETY ECONOMY

The necessary accessories. Add greatly to comfort in touring, save wear on soles, heels, and floor boards and prevent accidents by making a foot slip impossible.

Ask your dealer or address

CUSHION PEDAL COMPANY

287 San Fernando Blvd., Los Angeles, Cal.

Manufacturers also of the
Allen Cushion Step

An All-Rubber Running Board Mat at \$1.00 each



Please mention The Automobile Trade Directory

GRIPS, Tractor Wheel

Otwell Tractor Equipment Co., 6538 Livernois Ave., Detroit, Mich.

GROMMETS and EYELETS

American Brass Co., Waterbury, Conn.
(See page 165.)

Brewer-Tichenor Corp., Cortland, N. Y.
(See page 573.)

Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.

Traut & Hine Mfg. Co., New Britain, Conn.

GUARDS, Motorcycle Chain

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 521.)

GUARDS, MOTORCYCLE KNEE—See Shields, Motorcycle Knee**GUARDS, Motorcycle Mud**

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 521.)
Standard Parts Co., Cleveland, O.
(See page 253.)

GUARDS, MUD—See Fenders

GUARDS, Oil for Fords

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
Denco Co., 89 Broadway, Buffalo, N. Y.

GUARDS, RADIATOR—See Fenders or Guards, Truck Radiator**GUARDS, Timer Wire, for Fords**

King—See Pawnee Mfg. & Sales Co.
Pawnee Mfg. & Sales Co., Pawnee City, Neb.
"King."

GUIDES, BELT, FOR FORDS—See Guides, Fan Belt**GUIDES, BRAKE ROD, FOR FORDS—See Supports, Brake Rod****GUIDES, Fan Belt, for Fords**

(To prevent belt slipping off pulley)

Adco—See American Automatic Devices Co.
American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco."
(See page 77.)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Aults—See Heaton & Ault.

BB—See Bayne Mfg. Co.

Bayne Mfg. Co., Bushnell, Ill. "BB."
(See page 669.)

Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Cooper Auto Supply Co.—See Casco Mfg. Co.
Dependable—See Gahm-McCormick Co.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable."
(See page 249.)

Heaton & Ault, 6247 Greenwood Ave., Chicago, Ill. "Aulta."

Home Light Co., 3253 Milwaukee Ave., Chicago, Ill.

Kant Slip—See Republic Auto Parts Co.

Metal Stamping Co., 12th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "Stay-On."

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Kant Slip."

Stay-On—See Pedersen Lubricator Co.

GUIDES, ROAD—See Maps, Road**GUIDES, Tractor Steering**

(For automatically steering or guiding tractor when plowing)

Hansmann Mfg. Co., Long Prairie, Minn.

Willis-Fisk Mfg. Co., 202 N. Locust St., Pittsburgh, Pa.

GUN LOADERS—See Loaders, Grease Gun**GUN METAL FINISH—See Treating, Heat; also Enamels, Lacquers and Finishes, Brass****GUNS, GARAGE GREASE—See Guns, Portable Garage****GUNS, Grease**

Agner Simplex Co.—See Hinrichs Mfg. Co.
Alemite Die Casting & Mfg. Co., 341-51 W. Chicago Ave., Chicago, Ill.

All-Way—See Famasco Distributing Co.

A-K—See Angsten-Kox Co.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
(See page 537.)

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)

Atlantic Motor & Supply Co., 63 Gorham St., Boston, Mass.

B. & S. Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X. L."

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

Bennett Injector Co., Muskegon, Mich.
(See page 473.)

Big Dane—See Miller & Starr Co.

Blue Champion—See Robert-Irwin Mfg. Co.

Blue Deer—See Melray Mfg. Co.

Boston—See Randall-Falchney Co.

Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "E-Z-Fill." (See page 425.)

Bridgeport Brass Co., Bridgeport, Conn.
(See page 757.)

Coe-Stapley Mfg. Corp., West Haven, Conn. (See page 539.)

Cox Brass Mfg. Co., Albany, N. Y.
(See page 171.)

Creascent Mfg. Co., 129 Rende St., New York, N. Y. (See page 759.)

Critz Mfg. Co., Santa Maria, Cal.

Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.

Econo-Lub—See Middle States Oil Co.

Everything is listed under the NOUN or principal word

HANDY GREASE AND OIL INJECTORS

For Every User of Grease and Oil. Garages, Fleet Owners, Car Owners and Truck and Tractor Owners thoroughly indorse the handy Bennett Injectors as time and labor-savers. In each instance, these injectors have proven to be a highly profitable investment, serving indispensably in any kind of weather.



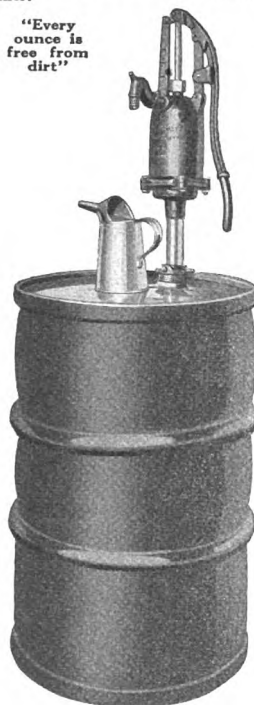
Newly Patented

Universal Grease Can Injector

The indispensable injector pictured above; for "every user of grease." The only pump on the market that pumps grease DIRECT FROM ORIGINAL CONTAINER into automobile, tractor and truck. Fits any kind of grease can or pail, round or square; holding from 5 to 50 lbs. of grease. Measures grease, $\frac{1}{2}$ lb. per stroke. Equipped with 50" of good quality hose. See outfit at right, unattached.

List Price
\$7.00

"Every ounce is free from dirt"



Universal Grease Can Injector

Barrel Oil Injector

This new Rapid Delivery Barrel Injector illustrated at left, fits on all Steel Barrels or Drums with standard $1\frac{1}{2}$ " or 2" bungs. No adjustments or fussy stop setting. Simply push lever to obtain desired amount of oil. Exactly measures $\frac{1}{2}$ pint, pints and quarts. Equipped with Non-Drip nozzle and padlock. Made entirely from high-grade cast iron and brass. Gives quicker, better service than any "crank pump."

List Price
\$22.00

Handy Barrel Grease Injector



List Price **\$37.00**

This Barrel Grease Injector has been a money maker from the start. Attaches to any barrel, wood or steel, and pumps one-quarter pound of grease per stroke. Is equipped with our special Non-Drip Nozzle. Swiveled casters make handling barrel weighing as much as 500 lbs., easy. This barrel injector proves an asset in any lubricating department.

No-Valve Cabinet Grease Injector



Greases Bear Axles and Transmissions easily and quickly. Pumps both heavy engine oil and grease accurately, throwing $\frac{1}{4}$ lb. of grease with each plunger stroke. Operates with one hand, leaving other hand free to handle hose. Holds 22 lbs. of grease. Entirely eliminates waste.

List Price
\$9.00

Write for descriptive folder and distributing proposition

THE BENNETT INJECTOR COMPANY

Manufacturers and Inventors of Grease and Oil Handling Devices
Muskegon

Michigan

Please mention The Automobile Trade Directory

GUNS, Grease (Continued)

Edelmann & Co., E., 2628 N. Crawford Ave., Chicago, Ill. "Gem." "Jumbo."
 Ero Mfg. Co., 752-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Essex Brass Corp., G. B., 3000 Franklin St., Detroit, Mich.
 H-Z-Fill—See Boston Auto Gage Co.
 Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Distributors for U. S. All-Way Oil Co., Waterbury, Conn. "All-Way.") (See page 421.)
 Fisher—See Puritan Mfg. Co.
 Forc-Ful—See Zinke Co.
 Gem—See Edelmann & Co.
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 Harris Hdw. & Mfg. Co., D. P., 24-26 Murray St., New York, N. Y. "Rollfast."
 Harris Mfg. Co., D. P., Reading, Pa.
 Hinrichs Mfg. Co., 115 S. Dearborn St., Chicago, Ill. (Sole Distributors for Agner Simplex Co., Burlington, Wis. "Simplex.")
 Horton—See Lyman, Kent E.
 I. C. Mfg. Co.—See Zinke Co.
 Jackson Grease Gun Co., 519 21st St., Denver, Colo.
 James—See Generator Valve Co.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Victor." (See page 751.)
 Jumbo—See Edelmann & Co.
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Lee, 516-18 Van Ness Ave., San Francisco, Cal.
 Lyman, Kent E., American Trust Bldg., Cleveland, O. "Horton."
 Mann Corp., Kankakee, Ill.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "Silver Giant."
 Melray Mfg. Co., 722 N. Vandeventer Ave., St. Louis, Mo. "Blue Deer."
 Middle States Oil Co., Engineers Building, Cleveland, O. "Econo-Lub."
 Miller & Starr Co., 250 Green St., Brooklyn, N. Y. "Big Dane."
 Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. "Victory." (See page 599.)
 Noera Mfg. Co., 21-27 Griggs St., Waterbury, Conn.
 Only Grease Gun Co., Newton, Ia.
 Pioneer—See Stevens & Co.
 Pretzel, Herman H., 108 S. Third St., Stillwater, Minn.
 Puritan Mfg. Co., 299 Prospect St., Bridgeport, Conn. "Fisher."
 Railway Specialty Co., Atchison, Kans. "Rysco."
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Boston."
 Robert-Irwin Mfg. Co., 427-51 W. Broadway, New York, N. Y. "Blue Champion." (See page 609.)
 Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon." (See page 353.)
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)
 Rollfast—See Harris Hdw. & Mfg. Co.
 Romon—See Roberts & Monroe.
 Rowe Co., James C., 714-16 E. Baltimore St., Baltimore, Md.
 Runyon Mfg. Co., 447 S. Division St., Grand Rapids, Mich.
 Rysco—See Railway Specialty Co.
 Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Wonder Minute." (See page 759.)

Silver Giant—See Mayo-Skinner Mfg. Co.
 Simplex—See Hinrichs Mfg. Co.
 Stevens & Co., 375 Broadway, New York, N. Y. "Pioneer." (See page 201.)
 Strickler, T. H., 4231 Wilcox St., Chicago, Ill.
 Toomey Grease Gun Co., Edmore, N. Dak.
 Townsend & Co., S. P., Bloomfield, N. J.
 Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
 U. S. All-Way Oil Co.—See Famasco Distributing Co.
 Victor—See Judd & Leland Mfg. Co.
 Victory—See Monarch Carriage Goods Co.
 Vital Mfg. Co., 7507 Quincy St., Cleveland, O.
 Warren Refining & Chemical Co., Cleveland, O.
 Warren & Anderson, 404 Boston Bk., Minneapolis, Minn. "Ekarn."
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)
 Wonder Minute—See Sidel-Rattner Mfg. Co.
 Wood Mfg. Co., A. J., Leonard Bldg., Grand Rapids, Mich. "Novalue."
 World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.
 X. L.—See B. & S. Mfg. Co.
 Zinke Co., 1823-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Forc-Ful.") (See page 692.)

GUNS, Oil

All-Way—See Famasco Distributing Co.
 Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 B. & S. Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X. L."
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Bennett Injector Co., Muskegon, Mich. (See page 473.)
 Blue Champion—See Robert-Irwin Mfg. Co.
 Boe Mfg. Co., 941 E. Hennepin Ave., Minneapolis, Minn. (See page 573.)
 Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)
 Copley—See Randall-Falchney Co.
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)
 Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Edelmann & Co., E., 2628 N. Crawford Ave., Chicago, Ill. "Gem." "Jumbo."
 Ero Mfg. Co., 752-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Essex Brass Corp., G. B., 3000 Franklin St., Detroit, Mich.
 Famasco Distributor Co., 694 Main St., Buffalo, N. Y. (Sole Distributors for U. S. All-Way Oil Co., Waterbury, Conn. "All-Way.") (See page 421.)
 Gem—See Edelmann & Co.
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 Gleason-Peters Air Pump Co., 324 Classon Ave., Brooklyn, N. Y.
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Harris Hdw. & Mfg. Co., D. P., 24-26 Murray St., New York, N. Y. "Rollfast."
 James—See Generator Valve Co.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. (See page 751.)
 Jumbo—See Edelmann & Co.

Everything is listed under the NOUN or principal word

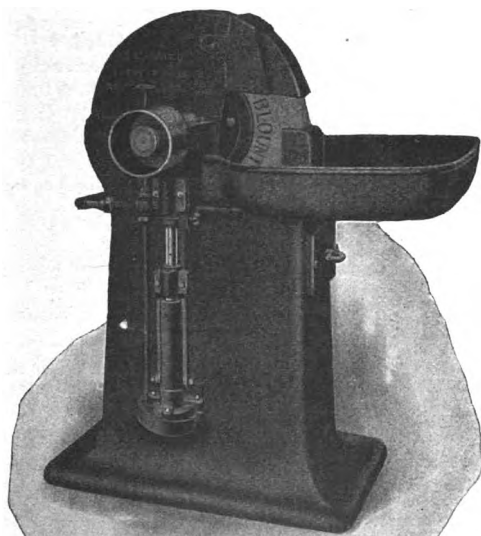
AUTOMOBILE GLASS CO.

BODY LIGHTS—WINDSHIELDS
BACK CURTAIN GLASS
EVERYTHING IN GLASS FOR AUTOMOBILES

Telephone:
CHERRY 235
CADILLAC 4379

DETROIT

FIRST STREET
Between Congress and
Fort Streets W.



Send for Catalog

GRIND IT on a BLOUNT

Our Wet Tool
Grinders are
built in three
sizes: For
14" — 20" & 30"
Grinding Wheels

*We also manufacture a
complete line of dry
grinders and a complete
line of speed lathes.*

J. G. BLOUNT CO.
EVERETT, MASS.

SPIRAL BEVEL GEARS

Made "Right" in Philadelphia
Inquiries solicited

LEVENE MOTOR COMPANY
2200 Diamond Street
PHILADELPHIA, PA.

Please mention The Automobile Trade Directory

GUNS, Oil (Continued)

Kellogg Mfg. Co., Rochester, N. Y.
(See page 753.)
McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
Monarch Auto Specialties Co., 1211-13 Claybourn Ave., Chicago, Ill.
Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn.
Pretzel, Herman H., 108 S. Third St., Stillwater, Minn.
Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Copley."
Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion."
(See page 609.)
Rollfast—See Harris Hdw. & Mfg. Co.
Rose Mfg. Co., Frank, Hastings, Neb.
(See page 761.)
Strickler, T. H., 4231 Wilcox St., Chicago, Ill.
Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
U. S. All-Way Oil Co.—See Famasco Distributing Co.
World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.
X. L.—See B. & S. Mfg. Co.

GUNS, Portable Garage Grease

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
Bennett Injector Co., Muskegon, Mich.
(See page 473.)
Boe Mfg. Co., 941 E. Hennepin Ave., Minneapolis, Minn. (See page 573.)
Bohannon Mfg. Co.—See Zinke Co.
Dearborn Equipment Co., Kalamazoo, Mich. (Sole Distributors for Grease Pump Mfg. Co., Chicago, Ill. "O'Brien.")
(See page 429.)
Ekern-Turk Mfg. Co., Pipestone, Minn.
Grease Pump Mfg. Co.—See Dearborn Equipment Co.
Midway Mechanical Co., St. Paul, Minn.
O'Brien—See Dearborn Equipment Co.
Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.
Rose Mfg. Co., Frank, Hastings, Neb.
(See page 761.)
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Bohannon Mfg. Co., Chas., Des Moines, Iowa.)

HACK SAW BLADES—See Blades, Hack Saw

HACK SAWS, ROTARY—See Saws and Cutters, Rotary

HACK SAWS, ROTARY—See Saws, Rotary Hack

HAIR PICKING MACHINES—See Machines, Hair Picking

HAIR, Upholstery

(For Upholstery Mosa—See Mosa, Upholstery; for Upholstery Felt—See Felt, Upholstery)

Armour Curled Hair Works, 1355 W. 31st St., Chicago, Ill.
Bentley Hair Co., Joseph, Pelham Ave., Methuen, Mass.
Blockson & Co., Michigan City, Ind.
(See page 479.)
Chicago Curled Hair Co., 2301-33 S. Paulina St., Chicago, Ill.

Delany & Co., (Tacony), Philadelphia, Pa.
Gordon Bros., Pierce & Orthodox Sts. (Frankford), Philadelphia, Pa.
Mitchell Co., P. R., Spring Grove & Harrison Aves., Cincinnati, O.
Morris & Co., U. S. Yards, Chicago, Ill.
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
Walpert & Co., Fred, 106-108 N. Gay St., Baltimore, Md.
Wilkins Co., Wm., Frederick Ave., Baltimore, Md.
Wilson & Co., Thos., 41st St. & S. Ashland Ave., Chicago, Ill.
Woll & Co., F. P., Church & Tacony Sts. (Frankford), Philadelphia, Pa.
Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

HAMMERS, Brass and Copper

Electric Materials Co., North East, Pa.
Goodell-Pratt Co., Greenfield, Mass.
Graham & Co., James, 293 Wooster St., New Haven, Conn.
Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.

HAMMERS, COPPER—See Hammers, Brass

HAMMERS, Machinists

Atha Tool Co., Chapel St., Newark, N. J.
Beall Bros., Fourth St., Alton, Ill.
Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Master."
Buffum Tool Co., Louisiana, Mo.
(See page 395.)
Cheney Hammer Corp., H., Little Falls, N. Y.
Clipper Tool Co., 234 Mills St., Buffalo, N. Y.
Cushman Co., Inc., Champaign, Ill.
(See page 479.)
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Han-D."
Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
Han-D—See Edelmann & Co.
Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.
Hyde Park Mfg. Co., Bernharts, Pa.
Master—See Bridgeport Hardware Mfg. Corp.
Maydole Hammer Co., David, 45-61 Lackawanna Ave., Norwich, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Perfect Handle—See Smith & Co.
Pexto—See Peck, Stow & Wilcox Co.
Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
Stanley Works (Special Productions Dept.), New Britain, Conn.
(See page 491.)
V&B—See Vaughan & Bushnell Mfg. Co.
Vaughan & Bushnell Mfg. Co., 2114-28 Carroll Ave., Chicago, Ill. "V&B."
Vichek Tool Co., Cleveland, O.
Warner Hammer Co., Cromwell, Conn.

HAMMERS, Power

Beaudry & Co., 45 Bromfield St., Boston, Mass. "Champion," "Peerless."
Bliss Co., E. W., 29 Adams St., Brooklyn, N. Y.

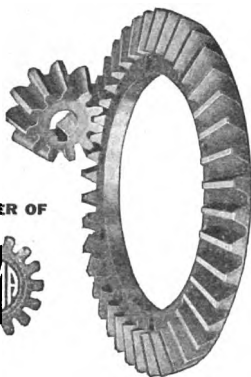
Everything is listed under the NOUN or principal word

CUT GEARS

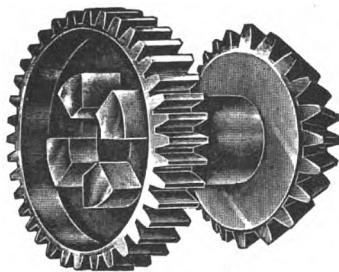
Send us your prints for estimate
on quality gears produced by men
of long experience.

**PRICES
RIGHT**

MEMBER OF



WEEKES-HOFFMAN COMPANY
SYRACUSE - NEW YORK



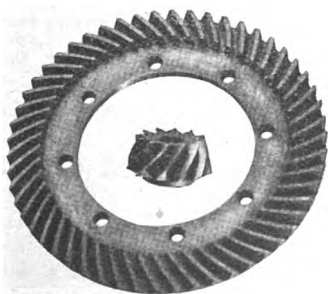
Our specialties are Gears,
Sprockets, Axle Shafts and
General Machine Work, mostly
for automobiles.

Our scientific case hardening
equipment makes possible the
obtaining of the highest effi-
ciency in gears. We specialize
in overcoming noisy differen-
tials.

SIER-BATH CO.
143 W. 54th St., New York City
Telephones, Circle 2923-2924

HIGH-GRADE GEARS

for
Rear Axles and Transmissions



Unexcelled Facilities
Best Grade Materials, Carefully Tested
Dependable Service—Reliable Quality

Indianapolis Tool & Mfg. Co.
Indianapolis, Ind.

**FENDERS and
HOODS for
TRUCKS and
TRACTORS
DOME LIGHTS
PILLAR LIGHTS
and
BENT GLASS
LAMPS**

For Any Purpose

**THE COLUMBUS
AUTO BRASS CO.**

Columbus, Ohio
Established 1908

HAMMERS, Power (Continued)

Bradley & Son, C. C., 423 N. Franklin St., Syracuse, N. Y.
 Champion—See Beaudry & Co.
 Champion Blower & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.
 Dienelt & Eisenhardt, 1304-18 N. Howard St., Philadelphia, Pa.
 Justice & Co., F. S., 617 Chestnut St., Philadelphia, Pa.
 Little Giant Co., 199 Rock St., Mankato, Minn.
 McLane, J. B., North Reading, Mass.
 MacGowan & Finigan Foundry & Machine Co., St. Louis, Mo. "Perfect."
 Massillon Foundry & Machine Co., Massillon, O.
 Nasel Engineering & Machine Works, 4041 N. Fifth St., Philadelphia, Pa.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Peerless—See Beaudry & Co.
 Perfect—See MacGowan & Finigan Foundry & Machine Co.
 Pettingell Machine Co., 77 Elm St., Amesbury, Mass.
 Quickwork Co., Celina Rd., St. Marys, O.
 Scranton & Co., 42 Church St., New Haven, Conn.
 Toledo Machine & Tool Co., 1736 Dorr St., Toledo, O.
 Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
 Williams, White & Co., Third Ave. & Euclid St., Moline, Ill.

HAMMERS, RUBBER—See Mallets, Rubber

HAMMERS, Steam

Alliance Machine Co., Alliance, O.
 Bement—See Niles-Bement-Pond Co.
 Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.
 Erie Foundry Co., 13th & Cranberry Sts., Erie, Pa.
 Massillon Foundry & Machine Co., Massillon, O.
 Morgan Engineering Co., Alliance, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Bement."

HAMMOCKS, Baby

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. (Southern California Distributor for "Gordon" Hammocks.) (See page 249.)
 Gordon Motor Crib Co., 219 N. State St., Chicago, Ill.
 Hilton Hammock Co., Lyon Bldg., Seattle, Wash.
 Perfection Mfg. Co., 2710 N. Leffingwell Ave., St. Louis, Mo. "Rock-a-Eye."
 Rock-a-Bye—See Perfection Mfg. Co.
 Standley Skid Chain Co., Boone, Iowa. (See page 381.)

HAMPERS, BASKETS and LUNCH BOXES, Touring

(See also Trunks, Automobile; also Stoves, Camp)

Ajax Trunk & Sample Case Co., 420 W. 126th St., New York, N. Y.
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Balley-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.
 Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y. "Campo."
 Burlington Basket Co., 600 N. Main St., Burlington, Ia. "Hawkeys."
 Campo—See Berg Auto Trunk & Specialty Co.
 Eveready—See Loeb, Ben S.
 Hawkeys—See Burlington Basket Co.
 Icy-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.
 Knickerbocker Case Co., 230 N. Clinton St., Chicago, Ill. "Made-Right."
 Loeb Co., Ben S., 200 Fifth Ave., New York, N. Y. "Eveready." (See page 325.)
 Made-Right—See Knickerbocker Case Co.
 Moats—See Prantiss-Wabers Stove Co.
 Orne Auto Diner Co., Everett, Wash.
 Prantiss-Wabers Stove Co., 85 Spring St., Grand Rapids, Mich. "Moats."
 Refrigo Auto Chest Co., Iron River, Mich.
 Warren Leather Goods Co., Worcester, Mass.
 Wilder Mfg. Co., 211-15 Pacific St., Brooklyn, N. Y.
 Winship, W. W., 71 Summer St., Boston, Mass.

HAND CLAMPS—See Clamps

HAND GRIPS—See Protectors, Doors

HAND HORNS—See Horns, Mechanical

HAND LAMPS—See Lamps, Electric Hand

HAND LANTERNS—See Lights, Electric Flash

HAND PASTE—See Soaps, Hand

HAND PUMPS—See Pumps, Hand

HAND PUNCHES—See Punches, Portable Hand

HAND SCREW MACHINES—See Machines, Screw

HAND SOAPS—See Soaps, Hand

HAND WARMERS—See Warmers, Hand

HAND WOUND CLOCKS—See Clocks, Hand Wound

HANDLE BARS, MOTORCYCLE—See Bars, Motorcycle Handle

HANDLES, BATTERY—See Handles, Storage Battery

HANDLES, Car Door

Aetna Brass & Bronze Co., 1631-35 E. 65th St., Cleveland, O.
 American Brass Novelty Co., Grand Haven, Mich.
 Anchor—See North & Judd Mfg. Co.
 Arcade Mfg. Co., Freeport, Ill.
 Art Work Shops, 828-36 E. Ferry St., Buffalo, N. Y. (See page 495.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Basco—See Briggs & Stratton Co.
 Bassick Co., Bridgeport, Conn. (See page 323.)

Everything is listed under the NOUN or principal word



CRAFTSMAN STEEL TOOLS

**WRENCHES—PLIERS—HAMMERS
PUNCHES—CHISELS—HATCHETS
CRAFTSMAN TOOL KITS**

**STANDARD ASSORTMENTS OR DESIGNED
TO MEET YOUR REQUIREMENTS FOR
AUTOMOBILE—TRUCK—TRACTOR NEEDS**

**THE CUSHMAN COMPANY, Inc.
CHAMPAIGN, ILLINOIS**

STERILIZED CURLED HAIR

Upholstery must do its part. Cushions upholstered with our **Sterilized Curled Hair** do not become matted and lumpy with use but retain their resilience, softness and shock-absorbing qualities throughout the life of the car.

We also specialize **Woven Hair**, furnishing same in rolls of continuous yardage or cut to dimension from buyer's patterns.

Our unusual facilities enable us to fill all orders promptly and accurately.

Prices and samples sent on request.

BLOCKSOM & COMPANY
Michigan City, Indiana

OUR NEW CATALOG "G"

is ready, showing a live line of body hardware for closed and open bodies, hearse mountings, tank and radiator fittings and accessories for supply jobbers, comprising grease cabinets, window anti-rattlers, robe rails, foot rests, hood fasteners, spotlight brackets

*Write us if you failed
to receive copy*

Attwood Brass Works
Grand Rapids, Mich.

For WINDSHIELDS, SEDAN LIGHTS, SIDE WINGS AUTO GLASS IS BEST

It is perfectly flat, has a clear white cast, is of 3-16 inch uniform thickness, is less expensive than plate and possesses all the elements of quality and beauty.

Send Us Your Patterns
We Render Prompt Service

Special Offer to Jobbers
on Ford and Dodge Sizes

AMERICAN AUTO GLASS CO., 5079 Broadway, CHICAGO

Please mention The Automobile Trade Directory

HANDLES, Car Door (Continued)

Brenner & Terris Mfg. Co., 542 W. Jackson Blvd., Chicago, Ill.
 Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."
 Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.
Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 591.)
 Cincinnati Aluminum Casting Co., Cincinnati, O.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Cowles & Co., C., New Haven, Conn.
 Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.
 English & Mersick Co., New Haven, Conn. (See page 571.)
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Hancock Mfg. Co., 801 E. Henry St., Charlotte, Mich.
 Hunt & Co., E. J., Equity Bldg., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H. Dayton, O.)
 Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Jonah & George, Little's Ct., Merrimac, Mass.
 Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
 Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.
 Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Pfau Mfg. Co., Cincinnati, O.
 Phoenix Lock Works, 321-27 Third Ave., Newark, N. J.
 Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.
 Shepard Art Metal Co., Detroit, Mich. (See page 481.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Ternstedt Mfg. Co., Artillery St. and Muster Ave., Detroit, Mich. (See page 785.)
 Thomson Mfg. Co.—See Hunt & Co.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 83.)
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.
 Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.

HANDLES, CRANK—See Handles, Starting Crank**HANDLES, DOOR—See Handles, Car Door****HANDLES, Extension Spot Light**

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Detroit Auto Accessories Co., Chicago, Ill. "Jiffy.")
 Detroit Auto Accessories Co.—See Bailey-Drake Co.
 Jiffy—See Bailey-Drake Co.

HANDLES, Extension Tool

Gardner Specialty Co., 424 Clay St., Scranton, Pa. "Lownsberry."
 Lownsberry—See Gardner Specialty Co.

HANDLES, Fuse

Safety Fuse Handle Co., 10213 Chichester Ave., Richmond Hill, L. L., N. Y.

HANDLES, SPOT LIGHT—See Handles, Extension Spot Light**HANDLES, Starting Crank**

(Rubber, Composition or Fibre Handles for Starting Cranks)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 American Vulcanized Fibre Co., 573 Equitable Bldg., Wilmington, Del. (See page 405.)
 Brandywine Fibre Products Co., 1406 Walnut St., Wilmington, Del. (See page 405.)
 Continental Fibre Co., Newark, Del. (See page 267.)
 Diamond State Fibre Co., Bridgeport, Pa.
 Mechanical Rubber Co., C. P. & Nickel Plate R. R., Cleveland, O.
 National Fibre & Insulation Co., Box 284, Yorklyn, Del. "S-S." (See page 405.)
 S-S—See National Fibre & Insulation Co.
 Wilmington Fibre Specialty Co., Wilmington, Del. (See page 251.)

HANDLES, Storage Battery

Mueller Electric Co., 2139-43 Fairmount Rd., Cleveland, O.

HANDLES, TOOLS—See Handles, Extension Tool**HANGERS and HINGES, Garage Door**

Allith-Prouty Co., Danville, Ill. (See page 535.)
 Clostite—See Wagner Mfg. Co.
 Coburn Trolley Track Mfg. Co., Blanche St., Holyoke, Mass.
 Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y.
 Loudon Machinery Co., 181 Court St., Fairfield, Ia.
 McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa. "Pittsburgh."
 Myers & Bro. F. E., 1000 Orange St., Ashland, O.

Everything is listed under the NOUN or principal word

The Shepard Art Metal Company

MANUFACTURERS OF

Automobile Closed Body Hardware

PERIOD AND PLAIN DESIGN

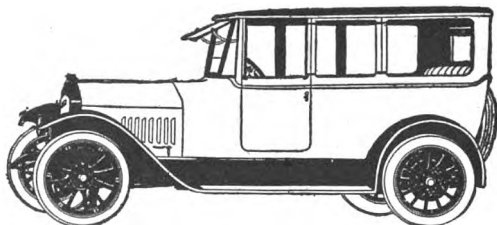
Detroit

Regulator Handles
Lever Lock Handles
Lever Lock Plates
Window Strap Plates
Switch Plates
Reading Lights

Pull to Handles
Window Strap Fasteners
Lever Lock Escutcheon
Plates
Dome Lights
Regulator Handle
Escutcheon Plates

Footman Loops
Curtain Posts
Robe Rail Fixtures
Outside Door Handles
Toilet Cases

FLAT GLASS



Crystal Sheet Glass

¶ The most practical flat glass for closed cars or body fittings. It is lower priced than plate glass and is just as serviceable.

¶ It can be furnished in thicknesses not exceeding $\frac{3}{8}$ ".

¶ By Government Test $\frac{3}{8}$ " Crystal Sheet Glass is stronger than $\frac{1}{4}$ " polished plate.

¶ We make thin glass for

Headlights
Clock Faces

Speedometers
Oil Gauges

AMERICAN WINDOW GLASS COMPANY

General Offices: FARMERS' BANK BLDG.

PITTSBURGH, PA., U. S. A.

Our
New
Home



The Automobile Supply Co.

Michigan Blvd. at 16th Street

Trade Mark Registered



DISTRIBUTORS, JOBBERS
AND EXPORTERS OF
AUTOMOTIVE EQUIPMENT
WHOLESALE ONLY

P. O. Address: 1601-03 Michigan Boulevard
CHICAGO, ILL., U. S. A.

Please mention The Automobile Trade Directory

HANGERS and HINGES, Garage Door (Continued)

Pittsburgh—See McKinney Mfg. Co.
Porter Co., J. E., 842 Guilin St., Ottawa, Ill.
"Straight-Away."
Richards-Wilcox Mfg. Co., Third St. & C. & E. & Q. R. R. Tracks, Aurora, Ill. "Slidetite."
Slidetite—See Richards-Wilcox Mfg. Co.
Stanley Works (Special Productions Dept.), New Britain, Conn.
(See page 491.)
Straight-Away—See Porter Co.
Wagner Mfg. Co., Cedar Rapids, Ia. "Clos-tite."

HANGERS, Hat

(*Tip for hanging, hats on robe rolls—See also Roofs, Hat*)

Buckeye—See Central Brass & Fixture Co.
Central Brass & Fixture Co., Segler & Hughes Bks., Springfield, O. "Buckeye."

HANGERS, LICENSE — See Holders, License; also Numbers, License

HANGERS, Pressed Steel Step

(*Pressed Steel Step or Running Board Hangers or Brackets; for Forged Hangers—See Forgings, Drop*)

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 895.)
Bossert Corp., Utica, N. Y. (See page 887.)
Brewer Tichenor Corp., Cortland, N. Y. (See page 573.)
Buffalo Pressed Steel Co., Buffalo, N. Y.
Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
Crosby Co., Buffalo, N. Y. (See page 893.)
Detroit Pressed Steel Co., Detroit, Mich. (See page 1053.)
Forayth Bros. Co., Harvey, Ill. (See page 1055.)
Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O. (See page 421.)
Maryland Metal Products Co., Hagerstown, Md.
Parish Mfg. Co., Reading, Pa. (See page 419.)
Parish & Bingham Corporation, Cleveland, O.
Powell Pressed Steel Co., Hubbard, O. (See page 893.)
Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
Transue & Williams Steel Forging Corp., Alliance, O. (See page 885.)

HANGERS, Spring for Fords

A-K—See Angsten-Kox Co.
Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (See page 537.)
Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 701.)

HANGERS, STEP—See Hangers, Pressed Steel Step

HARD RUBBER—See Rubber, Hard

HARDENING COMPOUNDS — See Compounds, Case Hardening

HARDENING FURNACES—See Furnaces, Annealing and Case Hardening

HARDENING MATERIALS — See Compounds, Case Hardening

HARDENING, METAL—See Treating, Heat

HARDNESS TESTING INSTRUMENTS — See Instruments, Metal Testing

HARNESS, WIRING, FOR FORDS—See Sets, Wiring

HASSOCKS, Automobile

(*For Metal Foot Rests—See Rests, Foot*)

Chicago Hassock Co., 2427 Warren Ave., Chicago, Ill.

HAT HANGERS—See Hangers, Hat

HATCHETS, MOTORISTS—See Axes,

HAT RACKS—See Racks, Hat

HATS, MOTORISTS—See Caps, Motorists

HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

HEADLIGHT BULBS—See Lamps, Miniature Incandescent

HEADLIGHT CONTROLLERS—See Dimmers or Shades, Headlight

HEADLIGHT CONTROLLERS FOR FORDS—See Dimmers or Shades, Headlight; also, Regulators, Headlight

HEADLIGHT DEFLECTORS—See Dimmers or Shades, Headlight

HEADLIGHT DIMMERS—See Dimmers or Shades, Headlight

HEADLIGHT GASKETS — See Gaskets, Headlight Lenses

HEADLIGHT REFLECTORS—See Reflectors, Headlight

HEADLIGHT REGULATORS FOR FORDS — See Regulators, Electric Light

HEADLIGHT SHADES—See Dimmers or Shades, Headlight

HEADLIGHTS, ACETYLENE—See Lamps, or Headlights, Acetylene

HEADLIGHTS, ACETYLENE TRACTOR— See Headlights, Tractor Acetylene

Everything is listed under the NOUN or principal word

Madison Cylinder Grinder

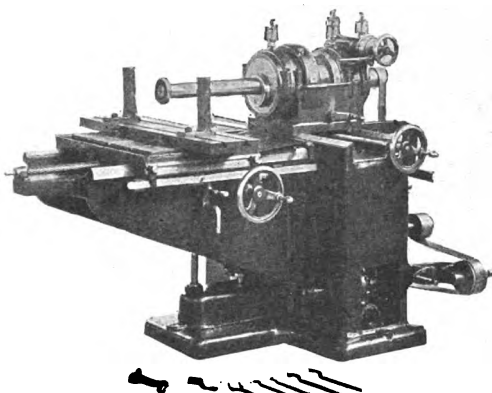
*A Simple, Rigidly
Constructed*

Cylinder Grinding Machine

Particularly adapted to
the REPAIR SHOP
for cylinder regrounding,
etc.

Write for Particulars

Agents Wanted

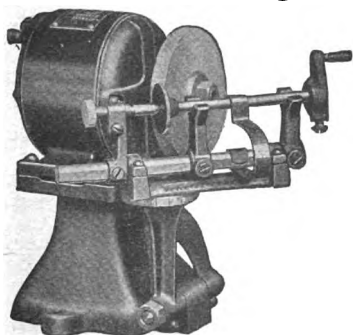


MADISON MACHINE TOOL COMPANY

1245 E. WASHINGTON AVE.

MADISON, WIS., U. S. A.

The Simplicity Grinder for Valve Facing



Universal in action, faces valves of
any size or angle. Faces true with
stem and not with center. Does a
perfect job in less than half the time
of high priced tools. Write for
catalogue and prices.

D. F. DUNHAM CO.
OXNARD, CALIFORNIA

PENMAID

Automobile Gears and Sprockets give you
the best material, finest workman-
ship and unexcelled service.



Bevel Gears cut theoretically correct. We
make Spur, Worm, Angle, Mitre, Internal Gears.

SPROCKETS FOR ALL MOTOR TRUCKS
Heat Treating of Every Description

Pennsylvania Gear and Machine Co.
East Toga, Welkel & Janney Streets, Philadelphia, Pa.

Please mention The Automobile Trade Directory

HEADLIGHTS, Electric

(See also *Lamps, Electric; for Acetylene Headlights—See Lamps, Acetylene*)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O.
 American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 557.)
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.
 E & J—See Edmunds & Jones Corp.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 485.)
 Hammer Co., E. A., 1839 Euclid Ave., Cleveland, O.
 Hankee Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.
 K-D Lamp Co., Cincinnati, O. (See page 485.)
 Model Auto Lamp Co., 1101 W. Randolph St., Chicago, Ill.
 Neverout—See Rose Mfg. Co.
 Rialto—See American Auto Lamp Co.
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)
 Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)
 Solar—See Hall Lamp Co.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

HEADLIGHTS, ELECTRIC FOR FORDS—
See Lamps, Electric Head**HEADLIGHTS, ELECTRIC TRACTOR—**
See Headlights, Tractor Electric**HEADLIGHTS, Tractor Acetylene**

American Acetylene Stove Co., 504 Masonic Temple, Minneapolis, Minn.
 Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."
 Hall Lamp Co., C. M., Detroit, Mich. (See page 485.)
 Indiana Lamp Co.—See Zinke Co.
 Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.
 Solar—See Hall Lamp Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
 Victor—See Corcoran-Victor Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

HEADLIGHTS, Tractor Electric

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O. "Sun-Lite."
 Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 485.)

Indiana Lamp Co.—See Zinke Co.
 Solar—See Hall Lamp Co.
 Sun-Lite—See Guide Motor Lamp Mfg. Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

HEADS, Boring

Hofer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.
 Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.

HEADS, Special Cylinder, for Fords

Craig-Hunt—See Speedway Engineering Co.
 Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Laurel Motors Corp.—Anderson, Ind. "Roots." (See page 339.)
 Rajo Motor Co., 1363 Racine St., Racine, Wis. (See page 457.)
 Roots—See Laurel Motors Corp.
 Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 408.)
 Wilson, K. R., 10-16 Look St., Buffalo, N. Y. (See page 247.)

HEADS, Grinder

American Production Machine Works, 965 Woodward Ave., Detroit, Mich. (See page 693.)

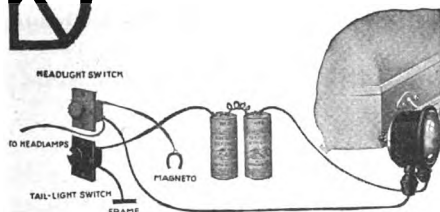
HEAT DEFLECTORS FOR FORDS—See
Deflectors, Heat**HEAT INDICATING METERS—See Meters,**
Water Temperature Indicating**HEAT TREATING—See Treating, Heat****HEAT SEALS, MOTOR—See Seals, Motor**
Heat**HEATED CLOTHING—See Clothing, Elec-**
trically Heated, Aviators**HEATED STEERING WHEELS—See**
Warmers, Hand**HEATERS, Automobile**

(See also *Gloves, Electrically Heated; also Wheels, Heated Steering; for Electric Foot Warmers—See Warmers, Electric Foot*)

Bovey Automobile Heater Co.—See Triple Action Spring Co.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Clark."
 Clark—See Chicago Flexible Shaft Co.
 Eureka Accessory Co., Dollar Bank Bldg., Youngstown, O.
 Faraday Co., 746 Chapel St., New Haven, Conn.
 Francisco Auto Heater Co., 1016 Mt. Pleasant Ave., Columbus, O.

Everything is listed under the NOUN or principal word

K-Line for Ford Cars



MODEL NO. 35 ASSEMBLY

"A Tail Lamp having two bulbs, one a high voltage for use off of the magneto, the other a low voltage for use on dry cells. A special switch for operating dry cell bulbs furnished with each outfit together with the necessary wire."

Price, each\$2.50
Diameter of front.....3 1/4"
Diameter of ruby lens.....3"

MODEL NO. 6

Especially designed for all model Ford cars manufactured since 1915, with special one bracket support.

Equipped with the K-D positive lock door, "You can't lose 'em." Bulb is 18 c.p., 9 volt, double wire system.

Price, per pair.....\$6.00
Diameter of door.....9"

MODEL NO. 31

Suitable for all model Ford cars manufactured since 1915, having special bolt and nut fastener.

Bulb is 2 c.p., 6-8 volt, double wire system unless otherwise ordered.

Price, each\$1.00
Diameter of front.....3 1/4"
Diameter of ruby lens.....3"

THE K-D LAMP COMPANY
CINCINNATI - - OHIO

SOLAR LAMPS

Show the Way

Solar lamps have been manufactured since 1896. They have stood every conceivable test which a high-grade lamp can be put to.

Automotive lamp equipment—electric and acetylene gas head lamps, acetylene gas generators, tail lamps, side lamps, searchlights, tonneau lamps—for passenger cars, trucks, tractors, motorcycles, bicycles.

Catalog and prices on request from manufacturers and jobbers.

C. M. HALL LAMP COMPANY

FACTORIES:

Detroit, Mich.

Kenosha, Wis.

SCREW MACHINE

PRODUCTS

Please mention The Automobile Trade Directory

HEATERS, Automobile (Continued)

- Hadco—See Hadden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco."
 (See page 821.)
 Hill, H. W., 10103 Prospect St., Chicago, Ill. "Utilizer."
 Hill Pump Valve Co.—See Zinke Co.
 Jonas, C. N. & F. W., 608 So. Dearborn St., Chicago, Ill. (Sales Representative for Noble Heater Co., Ft. Wayne, Ind.)
 (See page 346 B.)
 Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
 K. P. Products Co., 250 W. 54th St., New York, N. Y.
 K. & S. Auto Heater & Lock Co., 3357 S. Michigan Ave., Chicago, Ill.
 (See page 487.)
 Lehman Bros., 10 Bond St., New York, N. Y. "Queen," "Star."
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."
 Noble Heater Co.—See Jonas, C. N. & F. W.
 Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O.
 Queen—See Lehman Bros.
 Radio—See Milwaukee Auto Specialty Mfg. Co.
 Sexco—See Sexton & Co.
 Sexton & Co., C. W., 31 W. Main St., Waynesboro, Pa. "Sexco."
 Star—See Lehman Bros.
 Superior—See Joyce Auto Products Co.
 Taplex Corp., 37 36th St., Brooklyn, N. Y.
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (Also Sole Distributors for Bovey Automobile Heater Co., Chicago, Ill.) (See page 877.)
 Utility—See Zinke Co.
 Utilizer—See Hill, H. W.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.")
 (See page 687.)

HEATERS, Automobile, for Fords

(Exhaust heaters; for heated steering wheels—See Warmers, Hand)

- American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. (See page 77.)
 Bridgeford—See Home Light Co.
 Detroit Auto Heater Co., 3917 Dix Ave., Detroit, Mich.
 Douglas Auto-Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Dunham Co., Thos., Aurora, Ill. "Warmford." (See page 163.)
 Hill Pump Valve Co.—See Zinke Co.
 Home Light Co., 3353 Milwaukee Ave., Chicago, Ill. "Bridgeford."
 Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Warm-A-Ford."
 Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O.
 Shotwell-Johnson, Minneapolis, Minn.
 (See page 349.)
 Superior—See Joyce Auto Products Co.
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 877.)
 Utility, Jr.—See Zinke Co.

Warm-A-Ford—See Kokomo Electric Co.
 Warmford—See Dunham Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Jr.") (See page 687.)

HEATERS, EXHAUST—See Heaters, Automobile**HEATERS, GARAGE—See Heaters, Special Garage****HEATERS, Glue**

- Advance Machinery Co., Van Wert, O. "Wetmore."
 Calorel—See National Electrical Supply Co.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 International Electric Co., Indianapolis, Ind.
 National Electrical Supply Co., 1328-30 New York Ave., N. W., Washington, D. C. "Calorel."
 Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
 Wetmore—See Advance Machinery Co.

HEATERS, Mixture

(For heating mixtures in Carburetor or Manifold to facilitate starting)

- Allison Burner Co., Pioneer Bldg., Seattle, Wash.
 Arvin—See Indianapolis Air Pump Co.
 Asch and Co., Inc., 18-24 W. 61st St., New York, N. Y. "Bailey." (See page 243.)
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral." (See page 711.)
 Bailey—See Asch and Co., Inc.
 Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Ever-Ready."
 Colburn—See Kant-Miss Spark Plug Co.
 Comfy—See Hainert & Son.
 Coppock—See Motovic Products Corp.
 Crone, F. G., 281 W. Ferry St., Buffalo, N. Y.
 Electric Intake Heater Co., 117 E. Cortland St., Jackson, Mich.
 Ellis Car-Bur-Aid—See Motor Efficiency Corp.
 Ever-Ready—See Bear Mfg. Co.
 G. & G. Electric Heater Co., 219 N. Fourth St., Lafayette, Ind.
 Globe Machine & Stamping Co., Cleveland, O. "Sure Start." (See page 1039.)
 Great Western Removable Body Co., Fourth & Pierce Sts., Omaha, Neb.
 Harne & Le Blanc, Camp St., New Orleans, La.
 Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "Comfy."
 Ideal Mfg. Co., 1535 Main St., Anderson, Ind.
 Ieco—See Interstate Electric Co.
 Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Arvin."
 Indus—See Industrial Electric Mfg. Co.
 Industrial Electric Mfg. Co., 129 Beaubien St., Detroit, Mich. "Indus."
 Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La. "Ieco."
 Kant-Miss Spark Plug Co., Green Bay, Wis. "Colburn." (See page 489.)
 Lepper Mfg. Co., 101 N. Federal Ave., Mason City, Ia.
 Lo-See—See Wee Specialty Co.

Everything is listed under the NOUN or principal word

K. & S. Auto Equipment

Our Auto Heater can be used on any gas car.

It contains an aluminum heating coil, and, owing to its quick heating action, it develops sufficient heat for comfort on the coldest day while car is running at low speed.

The K. & S. Lock has been pronounced 100% perfect for its quality, simplicity and mechanism. Approved by Underwriters' Laboratory. Reduces insurance.

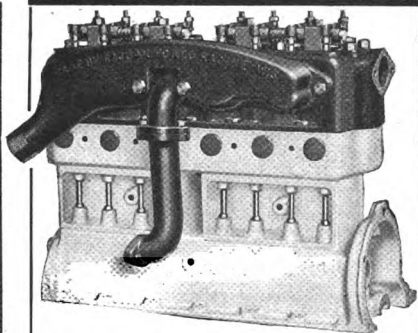
K&S

K. & S. Auto Shifting Lever Lock locks in neutral position, making it impossible to mesh gears. Models made for all ball and pivot type levers.



K. & S. Auto Heater & Lock Co., Inc.

3357 So. Michigan Ave.
Chicago, U. S. A.



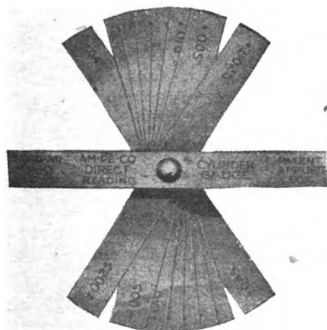
Rajo Valve-in-Head Doubles Ford Power

Transforms a Ford into a responsive, high-powered car that takes steepest hills and long hard pulls through muddy roads all on "high." Develops 50 to 60 miles an hour without effort—don't take anyone's dust. (Special racing model has made 100 miles an hour.) 25 to 40 miles on a gallon of gas, and a flexibility in "high" that practically eliminates use of "low," except in starting. Hot spot insures complete combustion, and minimized carbon. Larger water capacity insures proper cooling. Saving in fuel, alone, soon pays for head.

Write for description. Few good territories still open for live dealers.

Rajo Motor Co., 1363 Racine St., Racine, Wis.

For Accurate Cylinder Measurements



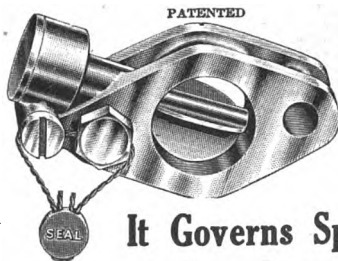
THE

AM-PE-CO DIRECT READING CYLINDER GAUGE

GUARANTEED ACCURATE
TO WITHIN .00025"

Simple - Quick - Convenient

AM-PE-CO SALES CO., Marshalltown, Iowa



PATENTED

\$15

IN U.S.

It Governs Speed absolutely!

For Ford Trucks and Commercial Cars

A tremendous money-saver! Compels careful, consistent driving of Ford trucks, or salesmen's cars. Prevents all speeding. You set it—and seal it! Unvarying. Unbeatable.

What causes ruined bearings, damaged pistons, and most motor ills? Excessive speeds. Racing engine. These things are avoidable. This is the remedy.

Ask to see a Dell governor. It does the work. Simple, reliable, and guaranteed absolutely efficient, or your money back. Quickly attached. Prevents accidents.

DELL & COMPANY
DETROIT 1237 Majestic Bldg. MICH.

Please mention The Automobile Trade Directory

HEATERS, Mixture (Continued)

Losee Motor Products Co., Hebron, Ill.
 "Protect-O-Motor." (See page 489.)
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich.
 Mechanical Utilities Corp., 5 N. La Salle St., Chicago, Ill.
 Motor Efficiency Corp., Real Estate Trust Bldg., Philadelphia, Pa. "Ellis Car-Bur-Aid."
 Motovic Products Corp., 441 State St., Detroit, Mich. "Coppock."
 National Automobile Equipment Co., Industrial Bldg., Indianapolis, Ind.
 Nelson & Hammond, Cleveland, O. "Thurs-ton."
 Olsen—See United States Vaporizer Co.
 Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.
 Pomeroy Electric Co., 158 E. Main St., Rochester, N. Y. (See page 600.)
 Protect-O-Motor—See Losee Motor Products Co.
 Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y. "Stallit."
 Stallit—See Staats & Co.
 Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind. (See page 495.)
 Superheater Mfg. Co.—See Wee Specialty Co.
 Sure Start—See Globe Machine & Stamping Co.
 Thermotral—See B. K. F. Corp.
 Thurston—See Nelson & Hammond.
 United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."
 Wee Specialty Co., 1806 Michigan Ave., Chicago, Ill. (Sole Distributors for Superheater Mfg. Co., Hebron, Ill.) ("Lo-See.")
 Wonder Carburetor Heater Co., Mason City, Ia.

HEATERS, Mixture, for Fords

(See also Mixers, Fuel; also Primers, Engine; also Moulds, Intake; for Kerosene Carburetors, See Carburetors, Kerosene)

Arvin—See Indianapolis Air Pump Co.
 Ames Carburetor Co., 1512-14 Clark St., Racine, Wis.
 Axleford Truck Co., 7311 Crandon Ave., Chicago, Ill. "Red Spot."
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral." (See page 711.)
 Ben-Wat Corp., Jamesburg, N. J.
 Bruford Vaporizer Co., Bloomington, Ill.
 Bull Dog—See Reardon Co.
 Coppock—See Motovic Products Corp.
 Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.
 Gardner Auto Products Co., Detroit, Mich. (Sole Distributor for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 197.)
 Gardner Carburetor & Brass Works—See Gardner Auto Products.
 Hart-Lawrence Co., 501-10 Broome St., New York, N. Y. (See page 489.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Letta."
 (See page 533.)
 Hot Spot Generator Co., 412 Cambridge St., Kansas City, Mo.
 Ideal Mfg. Co., 1525 Main St., Anderson, Ind.
 Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Arvin."
 Jiffy—See Twin Fire Spark Plug Co.
 K. H. K.—See Kay Co.
 Kay Co., Kay H., 987 Woodward Ave., Detroit, Mich. "K. H. K."

Letta—See Hill-Smith Metal Goods Co.
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich. "Quick-Start."
 Motovic Products Corp., 441 State St., Detroit, Mich. "Coppock."
 Olsen—See United States Vaporizer Co.
 Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
 Quick-Start—See Major Coil Protector Co.
 Quick-start—See Vic Dyk Co.
 Reardon Co., 208 State St., Peoria, Ill. "Bull Dog."
 Red Spot—See Axleford Truck Co.
 Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind. (See page 495.)
 Taplex Corp., 37 35th St., Brooklyn, N. Y.
 Thermotral—See B. K. F. Corp.
 Twin Fire Spark Plug Co., 3364 W. Grand River Ave., Detroit, Mich. "Jiffy."
 United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."
 Vic Dyk Co., 3124 Iola Ave., Des Moines, Ia. "Quick-Start."

HEATERS, Radiator

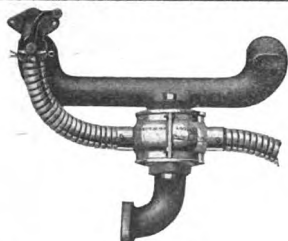
(For keeping radiators from freezing in garage)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Heaters.) (See page 243.)
 Calorel—See National Electrical Supply Co.
 Ceaco—See Cobb Electric Appliance Co.
 Cobb Electric Appliance Co., 11 Westland Ave., Boston, Mass. "Ceaco."
 Consolidated Car Heating Co., Singer Bldg., New York, N. Y.
 Edison Electric Appliance Co., 5660 W. Taylor St., Chicago, Ill. "Hughes."
 Globe Machine & Stamping Co., Cleveland, O. (See page 1035.)
 Hold-Heat—See Russell Electric Co.
 Hughes—See Edison Electric Appliance Co.
 Knight Metal Products Co., 259 Willis Ave., E. Detroit, Mich. "Mayall."
 Love—See Suburban Lighting Co.
 Majestic Electric Development Co., 656 Howard St., San Francisco, Calif.
 Mayall—See Knight Metal Products Co.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 National Electrical Supply Co., 1328-30 New York Ave., Washington, D. C. "Calorel."
 Neverout—See Rose Mfg. Co.
 Presto—See Metal Specialties Mfg. Co.
 Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 563.)
 Russell Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heat."
 Sharpe Electric Appliance Co., Murphy Bldg., Detroit, Mich.
 Suburban Lighting Co., Toledo, O. "Love."
 Taplex Corp., 37 35th St., Brooklyn, N. Y.

HEATERS, Radiators for Fords

Electric Machine Co., 329 W. Ohio St., Indianapolis, Ind. "Elmco."
 Elmco—See Electric Machine Co.

Everything is listed under the NOUN or principal word



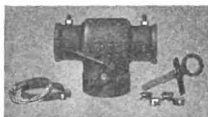
The Losee Protect-O-Motor

IMPROVES COMBUSTION—PREVENTS OIL DILUTION

Breaks up the heavy fuel particles into highly explosive atoms by the proper application of heat. More miles per gallon and increased power. Prevents crank case oil dilution and reduces carbon deposits. For all cars and trucks.

Losee Cut-outs

A well-constructed and efficient cut-out outfit that can be controlled from the dash.

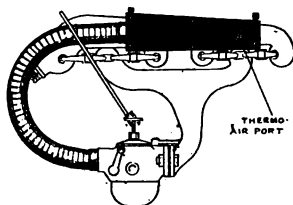


Write for our illustrated booklet

LOSEE MOTOR PRODUCTS CO.
Hebron, Illinois

For Economy Thermo-Gasoline Saver

[Patented]

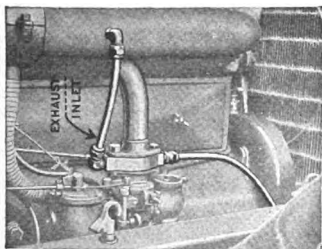


A saving of 20 to 35% in Gasoline and the insurance of a smooth running car are *guaranteed* to the purchaser of this device.

Works Automatically—Lasts Forever

WRITE

HART-LAWRENCE CO.
508-510 Broome St., New York City



25% SAVING

is big, yet it is less than half we have shown on some cars with the *Colburn Economy Vaporiser*. Heated by the exhaust gas—Costs nothing to run.

Cleaner combustion. More power. More miles to the gallon.

We spray the gas onto hot metal and deliver vapor ready to mix with the air supply.

It works. It saves.

Price \$5.00

Agents Wanted.

KANT-MIS SPARK PLUG CO.
GREEN BAY, WIS.

A Better Spark Plug

in the
KANT-MIS



We offer one of the most successful and clean working plugs. The special three-in-one electrode and its common sense arrangement of points, combined with prime insulation, wide inside clearance, generous size and good workmanship insure satisfaction.

\$1.00 at dealers or direct.

KANT-MIS SPARK PLUG CO.
GREEN BAY, WIS.

Please mention The Automobile Trade Directory

HEATERS, Special Garage

Buckeye—See Thornton Co.
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."
 Cosy—See Superior Mfg. Co.
 Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.
 Economy—See Pittsburgh Casting & Heater Co.
 Eureka—See Lattner Mfg. Co.
 Faraday Co., 746 Chapel St., New Haven, Conn.
 Fuller & Warren Co., River & Monroe Sts., Troy, N. Y. "Stewart."
 Globe Machine & Stamping Co., Cleveland, O. "Little Bachelor."
 (See page 1039.)
 Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.
 Lattner Mfg. Co., P. M., 515 F Ave., W. Cedar Rapids, Ia. "Eureka."
 Little Bachelor—See Globe Machine & Stamping Co.
 Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn. "Sunbeam."
 Masdon Mfg. Co., 93 Massachusetts Ave., Boston, Mass.
 O. K.—See Rippley Mfg. Co.
 Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa. "Economy."
 Rex—See Cleveland Heater Co.
 Richardson & Boynton, 260 Fifth Ave., New York, N. Y.
 Rippley Mfg. Co., Grafton, Ill. "O. K."
 Safety Heater Co., 378 Main St., East Orange, N. J.
 Schleit Mfg. Co., W. A., Eastwood St., Syracuse, N. Y. "Wasco."
 Sexco—See Sexton & Co.
 Sexton & Co., C. W., 81 W. Main St., Waynesboro, Pa. "Sexco."
 Scientific Heater Co., 1095 E. 163d St., Cleveland, O.
 Stewart—See Fuller & Warren Co.
 Sunbeam—See Lombardi Motor Car Co.
 Superior Mfg. Co., Sald & Magnolia Sts., Pittsburgh (N. S.), Pa. "Cosy."
 Thornton Co., F. C., 6712 Union Ave., Cleveland, O. "Buckeye."
 Wasco—See Schleit Mfg. Co.

HEATERS, STEERING WHEEL—See Warmers, Hand**HEEL PLATES—See Plates, Heel, Pedal or Step****HEEL RESTS—See Rests, Heel****HELMETS, Aviators***(See also Clothing, Aviators)*

Abercrombie & Fitch Co., Madison Ave. & 45th St., New York, N. Y. "King."
 International Coat Co., 114-18 Fifth Ave., New York, N. Y.
 King—See Abercrombie & Fitch Co.
 Sanders Co., 218½ Indiana Ave., Indianapolis, Ind.
 Spalding & Bros., A. G., 126 Nassau St., New York, N. Y.

HIGH SPEED STEEL—See Steel, High Speed**HINGE FORMING MACHINES—See Machines, Hood Hinge Forming****HINGES, Cabinet***(For Heat Boards, Buses and Cabinets)*

Keeler Brass Co., 261-71 Godfrey Ave., Grand Rapids, Mich.
 Sargent & Co., Water & Wallace Sts., New Haven, Conn.
 Stanley Works (Special Productions Dept.), New Britain, Conn.
 (See page 491.)

HINGES, Door

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Hinges.) (See page 243.)
 Atwood Vacuum Machine Co., 130 N. Water St., Rockford, Ill.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 E. V. B. Mfg. Co., 342 York St., New Haven, Conn.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 English & Mersick Co., New Haven, Conn. (See page 571.)
 Guder, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. (See page 935.)
 Konigsloew Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.
 Metal Specialties Mfg. Co., 328-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Ochsner & Sons Co., A., 1060 State St., New Haven, Conn.
 Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
 Presto—See Metal Specialties Mfg. Co.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
 Stanley Works (Special Productions Dept.), New Britain, Conn. (See page 491.)
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Ternstedt Mfg. Co., Artillery & Hunter Ave., Detroit, Mich. (See page 785.)
 Wainwright & Son, W. W., 16th St. & Western Ave., Connersville, Ind.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

HINGES, GARAGE DOOR—See Hangers and Hinges, Garage Door

Everything is listed under the NOUN or principal word

STANLEY
S.W.

Specialties in Steel

DO you need drawings, formings or stampings in volume quantities made to your own specifications? If so, then write to A. T. D. of our

SPECIAL PRODUCTIONS DEPT.
Main Offices and Plant:
NEW BRITAIN, CONN.

Branches: New York Chicago San Francisco
Offices: Los Angeles Seattle Atlanta

"Specialists in Wrought Steel Specialties"

Please mention The Automobile Trade Directory

HINGES, Hood

Bronson Co., Homer D., Beacon Falls, Conn.
 Scovill Mfg. Co., Waterbury, Conn.
 (See page 881.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

HINGES, Wind Shield

(For shields on closed cars)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

HITCHES, Automatic Disengaging Tractor

(A Hitch that automatically uncouples the plow from the tractor when the plow strikes an obstruction. For Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor; for Quick Stop Hitches—See Hitches, Automatic Quick Stop Tractor)

Greer Automobile Co., Erwin, 1521 Wabash Ave., Chicago, Ill.
 McKay—See Towers & Sullivan Mfg. Co.
 Meadows Mfg. Co., 91 Bell St., Bloomington, Ill.
 Parker Safety Hitch Co., Pittsburgh Bldg., St. Paul, Minn.
 Protectometer Co., 330 W. Madison St., Chicago, Ill.
 Towers & Sullivan Mfg. Co., E. Fourth St. & N. C. & St. L. Ry., Rome, Ga. "McKay."

HITCHES, Automatic Quick Stop Tractor

(A Hitch that automatically releases the tractor clutch when the plow strikes an obstruction. For Automatic Disengaging Hitches—See Hitches, Automatic Disengaging; for Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor)

Taco—See Tractor Appliance Co.
 Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

HITCHES, Tractor

Caswell Mfg. Co., Cherokee, Ia.
 Cherokee Guide Co., Cherokee, Ia.
 Dultmeier Mfg. Co., Manning, Ia. "Jiffey."
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Forsythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo.
 Goodrich Co., Chicago, Ill.
 Hausmann Mfg. Co., Long Prairie, Minn.
 International Harvester Co. of America, Harvester Bldg., Chicago, Ill.
 Jiffey—See Dultmeier Mfg. Co.

HITCHES, TRAILER—See Couplers, Trailer**HOBGING MACHINES—See Machines, Gear Hobbing****HOISTS, BODY—See Hoists, Truck Body****HOISTS, CHAIN—See Blocks and Hoists, Chain****HOISTS, PORTABLE—See Cranes, Portable****HOISTS, Truck Body**

(Power and Hand Hoists for Dumping Bodies.)

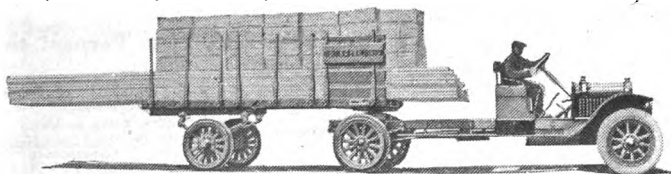
Archer Iron Works, 34th Pl. & Western Ave., Chicago, Ill. (See page 139.)
 Auglaize Hoist & Body Co., New Bremen, O. "Peerless."
 Auto Truck Service Co., 946-48 Third St., Milwaukee, Wis. "Giant."
 (See page 495.)
 Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill. "Dailey."
 Berry Hydraulic Co., Erie, Pa.
 Brownhoist—See Brown Hoisting Machinery Co.
 Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."
 Browning & Co., Victor R., 17701 Lake Shore Blvd., Cleveland, O.
 Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo. "Lightning."
 Dailey—See Auto Truck Steel Body Co.
 Eureka—See Lally Commercial Body Co.
 Giant—See Auto Truck Service Co.
 Graves Co., L. C., Springboro, Pa.
 Guaranty Motors Co., Cambridge, Mass. (See page 433.)
 Hanger Co., C. F., 6520-24 Carnegie Ave., Cleveland, O.
 Heil Co., 1126-40 Montana Ave., Milwaukee, Wis. "Hydro." (See page 139.)
 Hammell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for "Lightning" Hoists.) (See page 493.)
 Hydraulic Hoist Mfg. Co., 292 Walnut St., St. Paul, Minn.
 Hydro—See Heil Co.
 Ideal—See Lally Commercial Body Co.
 K & J—See Kilbourne & Jacobs Mfg. Co.
 Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."
 King—See Patriot Motors Co.
 Lally Commercial Body Co., Paris St., Everett, Mass. "Ideal," "Eureka," "Metropolitan."
 Lightning—See Columbian Steel Tank Co.
 Monarch—See Standard Steel Works.
 Metropolitan—See Lally Commercial Body Co.
 Michigan Bridge & Pipe Co., Lansing, Mich.
 National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo.
 Patriot Motors Co., Lincoln, Neb. "King."
 Peerless—See Auglaize Hoist & Body Co.
 Remson Hoist & Mfg. Co.—See Universal Motor Accessories Co.

Everything is listed under the NOUN or principal word

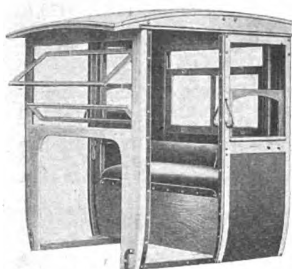
"Holler for Hummel"

TRUCK EQUIPMENT

CABS, HOISTS, BODIES, WINCHES, TANKS AND TRAILERS



Two-Ton Truck with a Six-Ton Load. Highway "Fifth-Wheel" Trailer



Rain or Shine Cab. Lasts Forever
Fits Any Chassis



"Partition Mounted" Truck Tank, 3 Compartment
With Rear Can Box and Side Can Rack



"Columbian" Hoist and Body on Truck



"Every Purpose" Dump Body. May Be Used As
Express-Platform or Stake Body By Removing
Sides and Lowering Tailgate



"Let the Engine Do the Work" with M-M
Capstan Winch and Truck Crane



Hoist and Body on Trailer

We also manufacture underground storage tanks for gasoline. Special steel bodies for handling brick, concrete, lumber, asphalt and garbage. End dump or side dump bodies—Riveted or welded.

HUMMEL MFG. COMPANY
3014 La Salle Street - - - ST. LOUIS, MISSOURI

Please mention The Automobile Trade Directory

HOISTS, Truck Body (Continued)

Simplex Mfg. Co., Conneautville, Pa.
 Standard Steel Works, 1740 Tracy Ave.,
 Kansas City, Mo. "Monarch."
 (See page 139.)
 Steffen-Van Steenwyk Co., 619 W. Seventh St.,
 Sioux City, Iowa. "Woodbury."
 T. E. C.—See Truck Engineering Co.
 Truck Engineering Co., 7651 Broadway, Cleve-
 land, O. "T. E. C."
 Universal Motor Accessories Co., 604 Ridge
 Arcade, Kansas City, Mo. (Sole Distribu-
 tors for Remson Hoist & Mfg. Co., Kansas
 City, Mo.)
 Van Dorn Iron Works Co., 2685 E. 79th St.,
 Cleveland, O.
 Wood Hydraulic Hoist & Body Co., 4198
 Bellevue Ave., Detroit, Mich.
 (See page 137.)
 Woodbury—See Steffen-Van Steenwyk Co.
 Woonsocket Wagon Mfg. Co., 15 Warrall St.,
 Woonsocket, R. I.
 Young—See Horizontal Hydraulic Hoist Co.

HOLD DOWN CLAMPS—See Clamps, Stor-
 age Battery Holding Down

HOLDERS, Aircraft Chart

Sperry Gyroscope Co., Manhattan Bridge
 Plaza, N. Y.

HOLDERS, BARREL—See Holders and
 Tipplers, Oil Can

HOLDERS, Battery

(See also Boxes, Battery)

Mengel Co., Louisville, Ky.
 Patterson—See Stanley & Patterson.
 Stanley & Patterson, West & Hubert Sts.,
 New York, N. Y. "Patterson."

HOLDERS, BELT, FOR FORDS — See
 Guides, Fan Belt

HOLDERS, Bouquet

(For Limousines and other closed cars)

Art Metal Works, Aronson Sq., Newark,
 N. J. (See page 495.)
 Art Work Shops, 828-36 E. Ferry St.,
 Buffalo, N. Y. (See page 495.)
 English & Merrick Co., New Haven, Conn.
 (See page 571.)
 Hawkes & Co., T. G., Corning, N. Y.
 International Silver Co., Meriden, Conn.
 Liberty Works, Egg Harbor City, N. J.
 (See page 555.)
 Moswell Mfg. Co., 175 Grand St., New York,
 N. Y.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St.,
 New York, N. Y.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway,
 New York, N. Y. "Rosco."
 (See page 313.)
 Watson Co., Mechanics St., Attleboro, Mass.

HOLDERS, BOW—See Holders, Top

HOLDERS, CHART—See Holders, Aircraft
 Chart

HOLDERS, CRANK—See Holders, Starting
 Crank

HOLDERS, DOOR—See Holders, Garage
 Door

HOLDERS, EMBLEM—See Holders, Flag

**HOLDERS, Flag, Pennant and Em-
blem**

(See also Flags, Pennants and Emblems)

A. F. H. Co., Dayton, O.
 American—See Rouse & Co.
 American Automobile Accessories Co., 1700
 Blue Rock St., Cincinnati, O. "J. A."
 Art Metal Works, Aronson Sq., Newark,
 N. J. (See page 495.)
 Blitwell Accessories Co., 401 E. 33rd St., New
 York, N. Y.
 Bon Tour Mfg. Co., Cobleskill, N. Y. "Grip-
 titte."
 Griptite—See Bon Tour Mfg. Co.
 Grillo—See Morris & Menckhaus Mfg. Co.
 H. K. Metal Products Co., 60 Grand St., New
 York, N. Y. "Liberty."
 Hudson Products Co., 44 E. 23d St., New York,
 N. Y.
 Jones Co., Ira A., 17 N. Wabash Ave., Chi-
 cago, Ill. "Old Glory."
 Kallgren, Geo. H., Iron Exchange Bldg.,
 Minneapolis, Minn. "Safety First."
 Liberty—See H. K. Metal Products Co.
 Modern Tool & Stamping Co., 311-17 S. Clin-
 ton St., Chicago, Ill.
 Morris & Menckhaus Mfg. Co., 34 E. Court St.,
 Cincinnati, O. "Grillo."
 Neverout—See Rose Mfg. Co.
 Old Glory—See Jones Co.
 Richardson Ball Bearing Skate Co., 154 E
 Erie St., Chicago, Ill.
 Rose Mfg. Co., Philadelphia, Pa. "Never-
 out." (See page 563.)
 Rouse & Co., H. B., 2214-16 Ward St., Chi-
 cago, Ill. "America."
 Safety First—See Kallgren, Geo. H.
 Stenman Wire Specialty Co., 18 Grafton St.,
 Worcester, Mass.
 3 A—See American Automobile Accessories Co.
 Utilities Sales Association, 697 W. 42d St.,
 New York, N. Y.

**HOLDERS, Flag, Pennant and Em-
blem, for Fords**

Morris & Menckhaus Mfg. Co., 34 E. Court St.,
 Cincinnati, O. "Wonermer."
 Wonermer—See Morris & Menckhaus Mfg. Co.

HOLDERS, GARAGE DOOR—See Holders
 and Openers, Garage Door

HOLDERS, GENERATOR — See Stands,
 Generator Holding

HOLDERS, Lathe and Planer Tool

(See also Tools, Lathes & Planers)

Agrippa—See Williams & Co.
 American Tool & Machine Co., 10 High St.,
 Boston, Mass.
 Armstrong Bros. Tool Co., 304 N. Fran-
 cisco Ave., Chicago, Ill.
 (See page 357.)

Everything is listed under the NOUN or principal word

"STARTIT" STARTS ANY CAR IN ANY WEATHER

Manifold Electric Heater and Vaporizer

Starts any car—fits any car—installed by anyone. Heats and vaporizes gasoline at distributing point in manifold and changes it into pure, dry gas and ignition is instantaneous. Can be used on six or twelve volt system. To install simply drill 1/8" hole in intake manifold, tap out with 1/4" standard pipe tap and screw "Startit" in, attach switch to cowl and wire to battery and "Startit" is ready to work.

The first cost is the only one; no repairs or adjustments needed, nothing to get out of order.

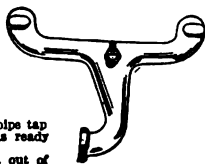
Saves Battery, Gasoline and Money. A ready-seller and good-will maker. Absolutely guaranteed.

Retail Price, \$3.50

DEALERS—GARAGEMEN: Write us to-day for our trade discounts.

THE STARTIT MANUFACTURING CO.

1523-25 East Washington Street, Indianapolis, Indiana



SUPERIOR Closed Body Equipment FOR Automobiles

Vanity and Smoking Cases

Concealed or Open Types

In Leather Cloth or Various Woods to
Harmonize with the Upholstery or Trim

Complete Interior Hardware

Coat Hooks	Lifter Locks
Curtain Rod Ends	Outside Door Handles
Dome and Corner	Pull-to Handles
Lights	Robe Cord Fixtures
Footman Loops	Rotary Handles
Horn Button Plates	Switch Plates
Lace Plates	Window Regulator
Lever Lock Handles- Plates	Handles

Specifications and Inquiries Solicited from
Automobile Manufacturers, Body Builders and
Jobbers to the Trade.

THE ART WORK SHOP
BUFFALO, N. Y.

828-36 East Ferry Street



RONSON AUTO MASCOTS

offer you the most
complete assortment
of beautiful radiator
ornaments ever de-
signed. Each one is
a masterpiece in mod-
eling and finish. Send
for illustrated catalog.

RONSON TRADE MARK REGISTERED

The Pocket Tool Kit

Contains 8 open end wrenches, screw-
driver, bottle opener and alligator jaw
—eleven necessary tools in one handy,
compact unit. Sells for \$1. Packed
in beautifully lithographed display car-
tons.

The Art Metal Works

Arnon Square, Newark, N. J.
New York Showroom, 347 Fifth Ave.
Showrooms in Chicago, St. Louis, Den-
ver and San Francisco.



THE GIANT "EASY LIFT" HOIST

Designed for Any Truck

The Most Practical Hoist Made



The Hoist with all the advantages
and none of the disadvantages.

The GIANT "Easy Lift" gives twice the lifting power with one-half the
lifting resistance. This means less power used for hoisting, less strain on
the power plant and time saving operation. It is mechanically con-
structed, with all the advantages and none of the disadvantages. No oil to
freeze—no leak-outs, no oil pumps, no space lost between body and
driver's seat—stops automatically and is held up by brake, no racking of
Motor while lifting, lighter in weight. Hand Hoist for all trucks up to
two ton. Power Hoist from two ton up. For further particulars and
price write—

AUTO TRUCK SERVICE COMPANY, Inc.

Manufacturers

Milwaukee, Wisconsin, U. S. A.

946-948 Third Street

Please mention The Automobile Trade Directory

HOLDERS, Lathe and Planer Tool (Continued)

Bown Machine Co., Battle Creek, Mich.
 Carr—See Thompson & Son Co.
 Champion—See Western Tool & Mfg. Co.
 Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.
 Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.
 Cruban Machine & Steel Corp., 63 Duane St., New York, N. Y.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 O. K. Tool Holder Co., Shelton, Conn.
 Premier Machine Tool Works, 1081 Broadway, Albany, N. Y.
 Railway Specialty Co., Atchison, Kans. "Rysco."
 Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."
 Red-E—See Ready Tool Co.
 Rysco—See Railway Specialty Co.
 Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Western Tool & Mfg. Co., Springfield, O. "Champion."
 Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. "Agrippa."
 (See page 1073.)

HOLDERS, License

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
 Auto License Holder Co., Middlebury, Vt.
 Automobile License Indicator Co., Lewisburg, Tenn. "Perfection," "Standard."
 Bailey-Fittwell Co., 1313 S. Grand Ave., Los Angeles, Cal.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.
 Cornelius-Browning Auto Co., 317-19 Jefferson Ave., Toledo, O. "Perfect."
 Dow Wire & Iron Works, Louisville, Ky.
 (See page 169.)
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 243.)
 Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa. (See page 497.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Neverout—See Rose Mfg. Co.
 Perfect—See Cornelius-Browning Auto Co.
 Perfection—See Automobile License Indicator Co.
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 761.)
 Stafford Auto Lamp & Number Co., 1475 Michigan Ave., Chicago, Ill.
 Standard—See Automobile License Indicator Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

HOLDERS, License, for Fords

(Holders or carriers for license plate for front of car)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
 American Mantle Co., Anderson, Ind.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Armand Machine Works, 442-59 N. Wells St., Chicago, Ill. (See page 371.)
 BB—See Bayne Mfg. Co.
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)
 Bayne Mfg. Co., Bushnell, Ill. "BB."
 (See page 669.)
 Boyd, C. C., Pulaski, Pa. "Little Giant."
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Dotti Mfg. Co., 123 S. Pinckney St., Madison, Wis.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa.
 (See page 987.)
 Humboldt—See Republic Auto Parts Co.
 Jofer—See Peoria Sheet Metal Works.
 Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa. (See page 497.)
 Little Giant—See Boyd, C. C.
 Martin & Co., Edward, 32 S. Clinton St., Chicago, Ill. "Perfection."
 Metal Specialties Co., Attleboro, Mass.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Midway Mechanical Co., St. Paul, Minn.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Neverout—See Rose Mfg. Co.
 Oakes Co., Indianapolis, Ind.
 (See page 397.)
 Peoria Sheet Metal Works, 3026 S. Adams St., Peoria, Ill. "Jofer."
 Perfection—See Martin & Co.
 Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 761.)
 W-A—See Whetstone & Co.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Worthington, A. F., 700 N. Main St., Los Angeles, Cal.

HOLDERS, LUGGAGE—See Holders, Suit Case

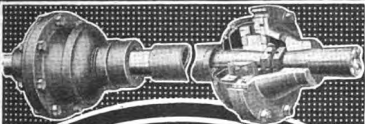
HOLDERS, Magneto Plug for Fords

Stout's Mfg. Co., Lockport, N. Y.
 (See page 699.)

HOLDERS, Oil Can

(For carrying oil cans or others on car)

Becco—See Michigan Motor Specialties Co.
 Buffum Tool Co., Louisiana, Mo.
 (See page 395.)



four driving members
—Larger bearing area. Bearing surfaces in *actual contact* with lubricant.
Forged steel housing—
No pins or yokes.
All wearing parts case hardened and ground to size. Complete flexibility
—Extreme compactness—
Great strength. Transmits a constant even flow of power.

CARL PICK COMPANY
WEST BEND, WIS.



LAMBERT

**License
Plate
Holder**



**A Distinctive—One Piece
Boltless Holder**

Simplicity is the basis of this holder. Can be put on or taken off entirely by hand. For the average motorist it does away with rusty bolts and bothersome noises. This holder will fit almost every standard make of car. Just slip holder through slot in plate, then through slot in bracket—give quarter turn and your license plate is on to stay. Absolutely locked until you reverse the operation to take it off.

These holders are mounted on an attractive counter display card having 36 pairs on each card that retail at 50c a pair or \$12.50 list price a card.

We would be very glad to ship you a card through your jobber. Just send us the order and mention your jobber's name. Sample pair by mail for 85c.

LAMBERT MANUFACTURING CO.
Highland Building Pittsburgh, Pa.



**THE HECLA WASHING
and SPRAYING MACHINE**

*Takes the Muck and Drudgery Out of
Automobile Washing*

WASH AND RINSE WITH THE SAME MACHINE

No soap is wasted. For washing automobiles, carts and carriages. Also for the emulsifying and spraying of all disinfectant products.

Write for Price and Discounts

Manufactured by
U. S. SPECIALTY COMPANY
Boston, Mass.

AUTOMOBILE SUPPLIES

Hardware

Saddlery

Cutlery

Sporting Goods

WYETH HARDWARE & MANUFACTURING CO.
SAINT JOSEPH, MISSOURI, U. S. A.

MANUFACTURERS

::

::

JOBBERS

::

::

IMPORTERS

Please mention The Automobile Trade Directory

HOLDERS, Oil Can (Continued)

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)
 Halladay Co., L. P., Decatur, Ill. "Re-Hable." (See page 171.)
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "Security."
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 Reliable—See Halladay Co.
 Security—See Mayo-Skinner Mfg. Co.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Uniq—See Spiro Mfg. Co.

HOLDERS or TIPPERS, Oil Can and Barrel

(For holding either round or square oil cans in garage—so arranged that the can may be readily tipped and oil poured from it without lifting it)

Halladay Co., L. P., Decatur, Ill.
 (See page 171.)

HOLDERS and OPENERS, Garage Door

(For electric garage door openers—See Openers, Electric)

Allith-Prouty Co., Danville, Ill. "Electromatic." (See page 535.)
 Electromatic—See Allith-Prouty Co.
 Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.
 Miller & Son Co., Geo. B., Waterloo, Iowa.
 National Mfg. Co., Sterling, Ill.
 Perkins—See Miller & Son Co.
 Phoenix Mfg. Co., Milwaukee, Wis.
 Richards-Wilcox Mfg. Co., Third St. & C. B. & I. R. R. Tracks, Aurora, Ill. "Sildette."
 Rixson Co., Oscar C., 501 S. Jefferson St., Chicago, Ill.
 Shelby Spring Hinge Co., Shelby, Ohio.
 Sildette—See Richards-Wilcox Mfg. Co.
 Stanley Works (Special Productions Dept.), New Britain, Conn.
 (See page 491.)

HOLDERS, PENNANT—See Holders, Flag

HOLDERS, PLANER TOOL—See Holders, Lathe and Planer Tool

HOLDERS, Starting Crank

(Leather strap and holder to prevent starting crank swinging or dropping down)

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bailey-Fitwell Co., 1313 S. Grand Ave., Los Angeles, Cal.
 Bantlin Co., Julius J., Cincinnati, O.
 Bemco—See B. E. Mfg. Co.
 Boston Leather Specialties Co., 30 Merrimac St., Boston, Mass.
 Calco—See Chicago Auto Leather Specialty Co.
 Campbell—See Perkins-Campbell Co.

Carter Co., George R., Connersville, Ind.
 Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calco."
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Economy Stay Co., Jefferson City, Mo.
 Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Holders.) (See page 115.)

Fesser Co., Frank S., 1103 Prospect St., Indianapolis, Ind. "Superior."

Fernald Mfg. Co., North East, Pa. "Jiffy."

Fitzwell—See Niagara Fabric Mfg. Co.

G & K—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass.

"G. & K."
 Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hide, Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.
 (See page 119.)

Jiffy—See Fernald Mfg. Co.
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rose Mfg. Co., Frank, Hastings, Neb.
 (See page 761.)

Specialty Harness Co., Dayton, Va.
 Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Superior—See Fesser Co.
 Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Waco."
 Waco—See Williamsport Leather Co.

HOLDERS, Starting Crank, for Fords

(Metal, leather or fabric holder for keeping starting crank up out of mud and dirt and also to prevent rattling)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Detroit Leather Works, 141-43 E. Lafayette Blvd., Detroit, Mich.
 (See page 121.)

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Holders.) (See page 115.)

G. & K.—See Graton & Knight Mfg. Co.
 Graton & Knight Mfg. Co., Worcester, Mass.
 "G. & K."

King Mfg. Co., 306 Washington St., Brookline, Mass.

King Pressed Steel & Mfg. Co., Boston, Mass.
 Oakes Co., Indianapolis, Ind.
 (See page 397.)

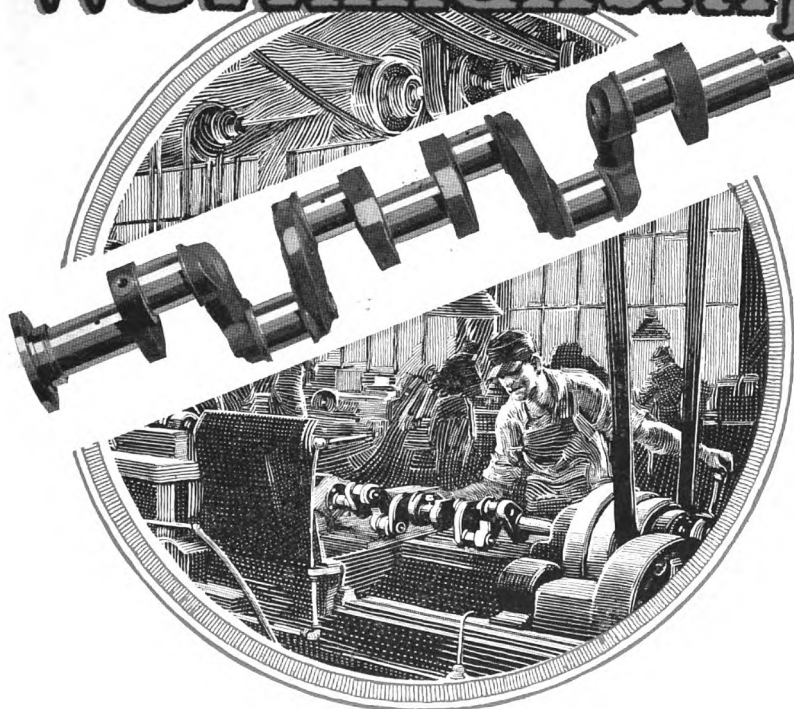
Perkins-Campbell Co., Cincinnati, O.
 (See page 115.)

Rose Mfg. Co., Frank, Hastings, Neb.
 (See page 761.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

Everything is listed under the NOUN or principal word

Workmanship



THE fixed policy of this Company to unite fine workmanship with modern production methods, is reflected in the character and volume of our business.

To have the largest plant in the world devoted to finishing Crankshafts is nothing. To do the best finishing is everything!

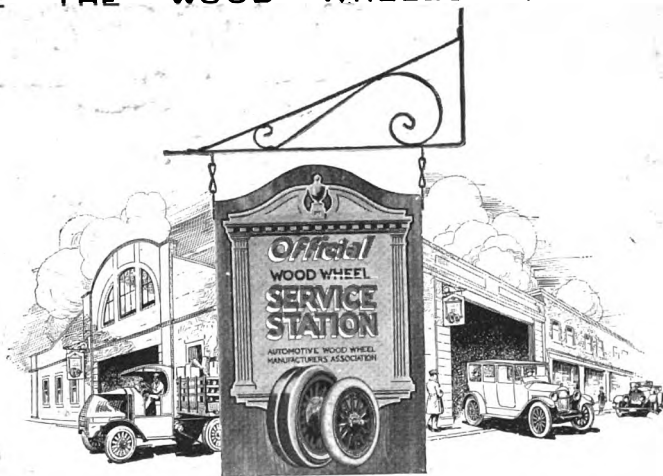
Among Passenger Car Builders our Customers include:

Dupont Manufacturing Co.
Holmes Automobile Co.
Kissel Motor Car Co.
Liberty Motor Car Co.
Mercer Motor Car Co.
National Motor Car & Vehicle Corporation.
Nordyke & Marmion Co.
F. B. Stearns Co.
Templar Motor Car Co.
Stutz Motor Car Co.
The Winton Co.
Brewster & Co.
H. C. S. Co.

(Next issue will list truck and tractor builders and users)

AUTOMOBILE CRANKSHAFT CORP.
FINISHERS OF CRANKSHAFTS
DETROIT ~ ~ ~ U.S.A.

NOTE THE WOOD WHEELS EVERYWHERE



Announcing a new era in WOOD WHEEL Service

Official Wood Wheel Service Stations have been established throughout the country so that better servicing and greater convenience may be provided for all users of Wood Wheels.

Every station that displays the Official Wood Wheel Service Station sign has been appointed because we believe that, in its territory, it is the best equipped to render efficient servicing under the most rigid requirements as to facilities and workmanship. Furthermore, through affiliation with the Automotive Wood Wheel Manu-

facturers' Association, each one of these stations has access to the best sources of wheel materials and the best engineering counsel on repair methods.

As the need arises, more organizations that qualify under the Wood Wheel standard of requirements, will be appointed.

This new system of servicing means that henceforth Wood Wheel Service will be characterized by the same thorough workmanship that for years has been the outstanding feature of Wood Wheel construction.

AUTOMOTIVE WOOD WHEEL MANUFACTURERS' ASSOCIATION
105 West Monroe Street Chicago, Illinois

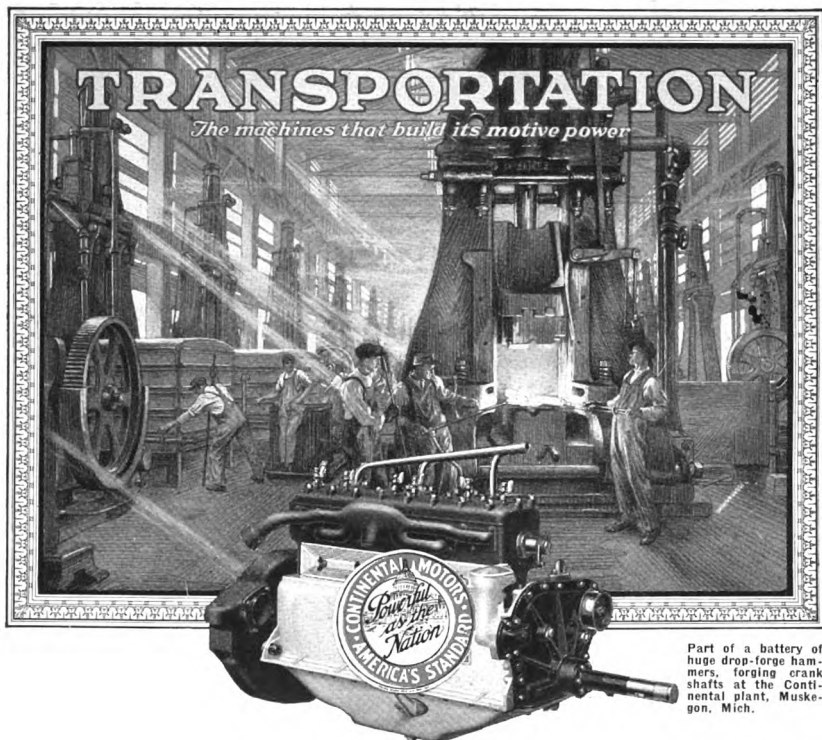
WOOD WHEELS

for MOTOR VEHICLES

Wood is the only substance that possesses ALL qualities essential to a perfect wheel material

Members of this Association guarantee Wood Wheels of their manufacture for the life of the car or truck on which placed.

Automotive
Wood Wheel
Manufacturers'
Association



Part of a battery of huge drop-forge hammers, forging crank shafts at the Continental plant, Muskegon, Mich.

The quality that is inherent in Continental Red Seal Motors is a big factor, of course, in establishing good will for the manufacturer who adopts the Continental Motor as standard equipment. ¶ But there is another factor that is in existence today only because the Continental Motors Corporation began building toward that point years ago. It is **PUBLIC APPRECIATION** of Red Seal quality. ¶ The uniformly high standards of Red Seal manufacture, maintained over a long period of years, coupled with the Con-

tinental policy of keeping the public **INFORMED** concerning the performance of the Continental Motor, have culminated in a **DEMAND** for that performance. ¶ And with the ushering in of a new buying era, with a newly awakened and better informed public making its purchases under the urge of an entirely new set of buying motives, there will be, unquestionably, a greater demand than ever for the quality that is known to exist wherever a crankcase carries—the Continental Red Seal.

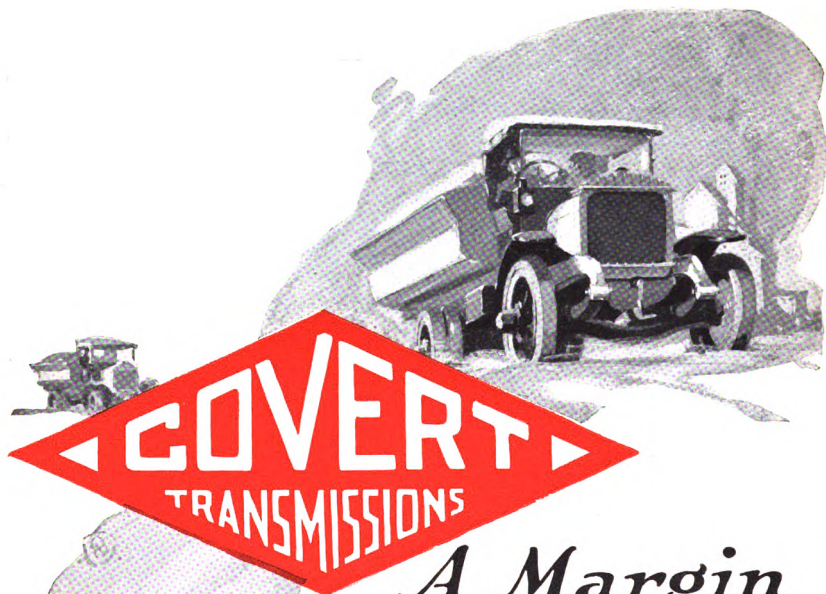
CONTINENTAL MOTORS CORPORATION

Offices: Detroit, U. S. A. Factories: Detroit and Muskegon

Largest Exclusive Motor Manufacturers in the World

Continental Motors

STANDARD POWER FOR TRUCKS, AUTOMOBILES AND TRACTORS



A Margin of Strength

The lightest—and the lowest-priced—transmission we build has been run successfully for months in a heavy truck, under load.

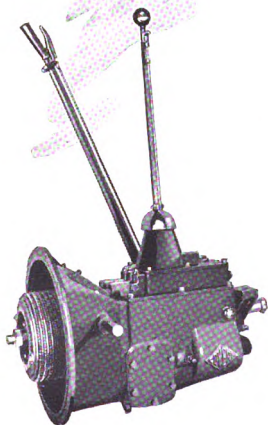
Yet we would never consent to supply this transmission for use in any vehicle heavier than the type for which it was designed.

When, therefore, you see a Covert Transmission in an automotive vehicle, you can know that its builder has provided a wide margin of transmission strength and safety.

You can also be confident that the other details of such a vehicle are similarly of the highest quality, and that you are therefore warranted in paying the relatively higher price such superior value always commands.

COVERT GEAR COMPANY, Inc.

Sales, Engineering and Factory: Lockport, N. Y.
Export Offices: 100 Broad Street, New York City



Kenyon Cord Tires and Tubes



The Kenyon Cord Tire is made full oversize, with black rectangular tread and gray side walls.

The Kenyon Cord Tire is essentially a quality tire, built on the principle that the best is ever the cheapest.

The Kenyon Rectangular Tread maintains superior non-skid resistance to forward or sideway impulses.

The Kenyon Tread has a continuous unbroken road surface, affording complete steering ease.

The Kenyon Tire inflated to the maximum still possesses the greatest resiliency: *Result:* Long life—greater mileage—comfort.

Sold by reliable dealers.

C. KENYON COMPANY, Inc.

Makers of Kenyon Weatherproof and Kenreign Waterproof Coats.

DEALER'S SERVICE DEPT., 754 Pacific St. Brooklyn, N. Y.



Do it with the
**ONE-HAND-Y
DRILL**

**The
Lightest—
Efficient
Electric Drill**

Compact and durable.

Operated and controlled entirely by one hand.

Chuck and bit concentric with hand-grip and thrust.

Weight three pounds—evenly balanced in hand when in service.

Pure aluminum housing.

All bearings in bronze bushings—spiral cut gears.

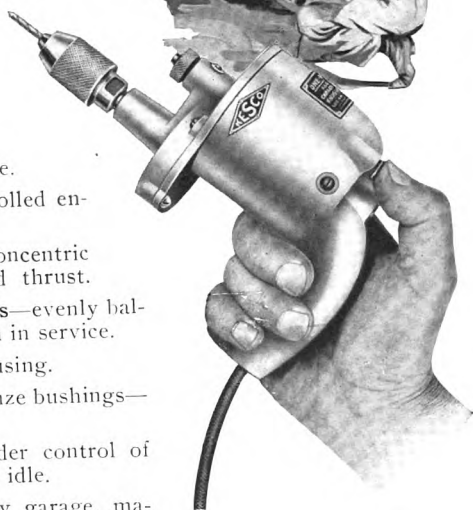
Switch always under control of thumb—cannot run idle.

Should be in every garage, machine, electric and wood-working shop.

Every mechanic needs one—a labor saving device.

Several users have reported that it has paid for itself in two to three days' use.

Equipped with Goodell-Pratt or Jacobs chuck.



Jobbers, Attention

The One-Hand-Y Drill is distributed exclusively through the Jobbing trade. It is a "best seller" in the mechanical tool line.

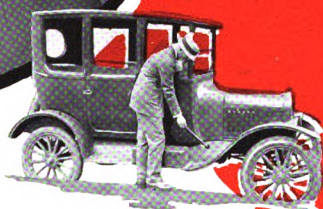
Write for Complete Information

KNIGHT ENGINEERING & SALES CO.
210 WEST SEVENTH STREET
LOS ANGELES

The AKURET OIL GAUGE for FORD CARS



THE OLD WAY
Difficult, Inconvenient and
a Loss of Time



THE AKURET WAY
Simple and Effective

Dealers—

The Akuret Oil Gauge prevents the carrying of excess oil, which induces rapid carbonization, or an insufficient supply, causing **BURNT BEARINGS**. It entirely eliminates the necessity of getting under the FORD to determine the oil supply.

Every Ford owner wants this gauge. Get your supply from your nearest jobber or write us direct for further information.

"Every One Guaranteed"
SELLS FOR \$2.50

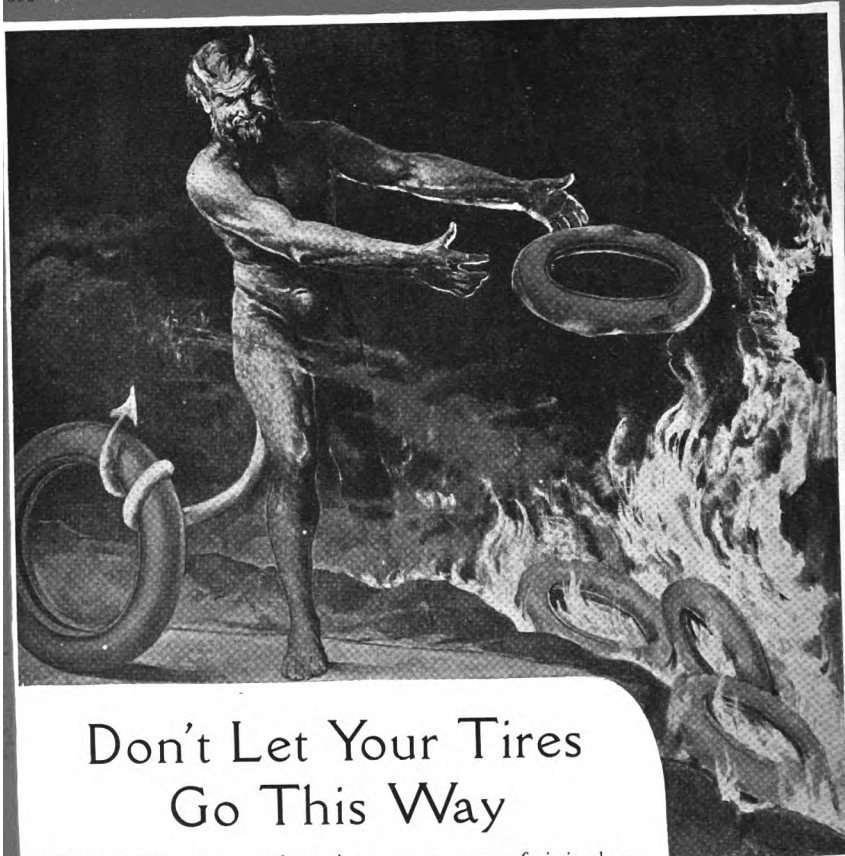
DISTRIBUTORS

American Motor Equip. Co.,
Boston, Mass.
Elmira Arms Co.,
Elmira, N. Y.
Perry & Sherman,
Utica, N. Y.
Albany Hardware Co.,
Albany, N. Y.
Essenkey Sales Co.,
Montreal, Canada.

Forshay Brothers,
New York City.
Automotive Products Co.,
Philadelphia, Pa.
R. J. Looch Co.,
Baltimore, Md.
Jackson Auto Supply Co.,
Pittsburg, Pa.
Southern States Equipment Co.,
New Orleans, La.
T. Day & Sons, Ltd.,
Okehampton, England.

F. J. Rhoades,
Cleveland, Ohio.
Modern Sales Co.,
Detroit, Mich.
Beck & Corbitt Co.,
St. Louis, Mo.
Universal Accessories Co.,
Indianapolis, Ind.
Beckley-Ralston Company
Chicago, Ill.

WALLACE MOTOR PRODUCTS CORPORATION
120 BROADWAY
NEW YORK, CITY



Don't Let Your Tires Go This Way

THEY WILL unless you keep the proper amount of air in them

Correct air pressure in your tires means:

MORE MILEAGE

EASIER STEERING

INCREASED SAFETY

The Schrader Universal Tire Pressure Gauge

will always tell you when your tires have the air pressure
prescribed by the Tire Maker

Price \$1.50 in the U. S. A.

A. Schrader's Son, Inc., **Brooklyn, N. Y.**

This ad should convey two messages to all dealers: Keep your stock right to supply
the demand. Keep the air pressure in your tires right.

WIRE WHEELS

WHERE our Wire Wheel Service Station signs are displayed, you will find complete equipment under the competent management so necessary for satisfactory service work. Some desirable territory is still open. We invite inquiries from responsible parties.

WIRE WHEEL CORPORATION OF AMERICA

(Successor to Houk Manufacturing Co.)

1700 Elmwood Avenue

Buffalo, N. Y.

Direct Factory Branches and Service Stations

NEW YORK, 835 11th Ave., at 57th St.

SAN FRANCISCO, 1690 Pine St.

PHILADELPHIA, 328 North Broad St.

CHICAGO, 23rd St. and Indiana Ave.

LOS ANGELES, 1216 South Grand Ave.

DETROIT, 433 Leland St.

Canadian Factory: Ajax Wire Wheel, Ltd., 64 Niagara Street, St. Catharines, Ont.

A Set of Houk or House wire wheels consists of five wheels, four inner hubs, four hub caps, hub cap wrench and spoke nipple wrench

HOOK

For over 600 models of 150 makes of cars. Specify make, model and year of car when writing for particulars.



HOUSE

For FORD, CHEVROLET 490 and OVERLAND Model 4. Finished in White, Black, Red, and Cream—color optional.

The Wire Wheel Service Station Sign





Guaranteed Axle and Drive Shafts

Spencer quality in Guaranteed Axle and Drive Shafts is assured through the use of the celebrated special chrome Molybdenum Steel as adopted for axle, drive and crank shafts in the leading high-priced cars.

Code	Name	Descr	No. Per Case	Wt. Per Case	Code	Name	Descr	No. Per Case	Wt. Per Case
AL-1	Allen, 1916-17-18-19		10		HN-1	Hudson Super Six		10	
MI-4	Abbott-Detroit, 1916-17, Right	Square	10	125	BK-3	Hudson, 4 Cyl., "20"	Square	10	110
MI-5	Abbott-Detroit, 1916-17, Left	Square	10	160	HE-1	Hupmobile, Model "R"		10	115
AN-1	Apperson, 1916-20, Right	Spined	10	160	MI-2	Interstate, Right	Spined	10	118
AN-1	Apperson, 1916-20, Left	Spined	10	160	MI-3	Interstate, Left	Spined	10	118
BE-1	Briscoe B 24, 1917-20	Spined	10	98	MI-4	Interstate, Right	Square	10	120
BK-1	Buick B 36-37-38, C 36-37, Right	Square	10	188	MI-5	Interstate, Left	Square	10	120
BK-2	Buick B 36-37-38, C 36-37, Left	Square	10	160	MI-2	Jackson 349, 1917, Right	Spined	10	120
BK-3	Buick 10-32-33-34-35-36	Square	10	110	MI-3	Jackson 349, 1917, Left	Spined	10	118
BK-4	Buick D-E-H-K, 45-46-47-44, 1917-18-19-20	Spined	10	128	BK-3	Krit "54", 1913-14-15	Square	10	110
BK-5	Buick 21-25-28-29-30-31, Right	Square	10	145	EX-1	Liberty, 1916-17	Spined	10	160
BK-6	Buick 21-25-28-29-30-31, Left	Square	10	130	CS-1	Liberty, 1918-19			
BK-7	Buick B 24-25, C 24-25, EX 24-25, Right, 1917-18-19-20	Square	10	130	ML-1	Maxwell, Model 25, Right			95
BK-8	Buick B 24-25, C 24-25, EX 24-25, Left	Square	10	120	ML-2	Maxwell, Model 25, Left			95
BK-9	Buick B 54-55, C 54-55, Right	Square	10	190	ML-3	Maxwell, Drive Shaft, Model 25, 1917, 1918-19	Spined	10	145
BK-10	Buick B 54-55, C 54-55, Left	Square	10	170	ML-4	Maxwell, Drive Shaft, Model 25, 1917-18-19	Spined	10	155
BK-11	Buick 3-4, C 4, D 4, Right	Square	10	160	MI-5	Maxwell, 1920			95
BK-12	Buick 3-4, C 4, D 4, Left	Square	10	160	MI-1	Mitchell C 42, M 7-42	Sp both ends	10	140
BK-13	Buick D 54-55, Right	Spined	10	193	MI-2	Mitchell D 40, 1917-18, Right	Spined	10	120
BK-14	Buick D 54-55, Left	Spined	10	170	MI-3	Mitchell D 40, 1917-18, Left	Spined	10	118
OA-1	Buick D 34-35, E 34-35, DX 34-35	Square	10	103	MI-4	Mitchell D 40, 1916-17, Right	Square	10	120
EX-1	Chalmers 630, 35 C	Spined	10	160	MI-5	Mitchell D 40, 1916-17, Left	Square	10	120
CS-1	Chalmers 630, 35 B, "Pin"		10		SN-2	Moon, 6-30		10	100
CR-1	Chandler, 1914-17	Spined	10	125	NH-1	Nash or Jeffery, 1916-20			
CR-2	Chandler, 1916-20	Spined	10	140	OA-1	Oakland 34 B and 34 C, 1917-20	Square	10	103
CR-3	Chandler, Pinion Shaft		10	45	OE-1	Oldsmobile 43, 4 Cyl., 1916		10	118
CT-1	Chevrolet 490		25	210	OE-2	Oldsmobile 44, 8 Cyl., 1916-17-18-19		10	
CT-2	Chevrolet Baby Grand, 1914-17	Square	10	115	OE-3	Oldsmobile 45 A, 45 B, 8 Cyl., 1920		10	
CT-4	Chevrolet, Drive Shaft, 490, 1917	Spined	10	154	OE-4	Oldsmobile 37, 8 Cyl., 1917-18-19-20		10	
CT-5	Chevrolet, Drive Shaft, 490, 1918-20	Spined	10	154	OD-1	Overland 60-78-80-81-83, Right	Square	10	125
CE-1	Cole "8", 1916-19	Sp both ends	10	145	OD-2	Overland 60-78-80-81-83, Left	Square	10	125
EX-1	Cole 850	Spined	10	160	OD-3	Overland 85, Right	Square	10	133
GT-1	Crow-Elkhart, Turned Center	Sp both ends	10	83	OD-4	Overland 85, Left	Square	10	137
EX-1	Davis, 1920	Spined	10	160	OD-5	Overland 90, Touring, Right	Square	10	115
DE-1	Dodge	Sp both ends	10	105	OD-6	Overland 90, Touring, Left	Square	10	105
DT-1	Dort 5 F, 1310	Square	10	105	OD-7	Overland 75 or 90 CC, Right	Square	10	90
DT-2	Dort 15 F, 310	Square	10	105	OD-8	Overland 75 or 90 CC, Left	Square	10	85
GT-1	Dread	Sp both ends	10	83	OD-9	Overland "4", 1920, Axle			88
AI-1	Elgin, 1918-19-20		10		MI-1	Paige 639, Right	Spined	10	120
EX-1	Essex	Spined	10	160	MI-3	Paige 639, Left	Spined	10	118
FD-1	Ford "56", Tread		25	215	MI-4	Paige 638-38-39, Right	Square	10	120
FD-2	Ford "60", Tread		25	235	MI-5	Paige 638-38-39, Left	Square	10	120
FD-3	Ford One-Ton Truck	Spined	10	165	BK-3	Paize 25, 4 Cyl.	Square	10	110
FD-4	Ford, Drive Shaft, Model "T"	Square	10	145	RC-1	Republic Truck, 1 and 1 1/2 Ton, M 10 and 11 F		10	125
FD-5	Ford One-Ton Truck, Drive Shaft	Spined	10	270	SN-1	Saxon, 6 Cyl., 1916-17		10	100
GT-1	Grant "6"	Sp both ends	10	83	SN-2	Saxon, 6 Cyl., 1918-20		10	100
GT-2	Grant, Pinion Shaft, Small		10		OA-1	Serripa-Booth, 6 Cyl.	Square	10	103
GT-3	Grant, n Shaft, Large Taper, 1917 1918-20	Spined	10	30	FD-5	Smith Form A Truck, One Ton		25	185
HR-1	Haynes 34, 1916-18, Right		10	180	SR-1	Studebaker, 4 and 6 Cyl., 1914-18	Spined	10	127
HR-2	Haynes 34, 1916-18, Left		10	150	SR-2	Studebaker "Special"	Spined	10	165
HR-3	Haynes 45, 1919-20, Right		10	178	SR-2	Studebaker "Big Six"	Sp both ends	10	83
HR-4	Haynes 45, 1919-20, Left		10	148	GT-1	Tulsa	Spined	10	160
					EX-1	Volie 15-27-39			
					VM-1	Vim	Square	10	125

Sold Only Through Jobbers

SPENCER METAL PRODUCTS CO., SPENCER, OHIO
616 S. Michigan Ave., CHICAGO 16-24 W. 21st St., NEW YORK

Spencer Quality



Costs You No More

V-D

SPARK PLUGS

"THE PLUG THAT SATISFIES"

SAVE Time - Trouble - Gas

Guarantee Every V-D Spark Plug is subjected to individual, final inspection and test and guaranteed perfect as to material and workmanship. The company stands behind their product and will make satisfactory adjustment in the event any VIKTRY DISC Spark Plug fails to give absolute satisfaction.

Price: $\frac{7}{8}$ in., \$1.25; $\frac{1}{2}$ in., \$1.00

FOR TERRITORY WRITE

The Viktry Sales Co.

SOLE DISTRIBUTORS OF

**VIKTRY
PRODUCTS
VIKTRY**

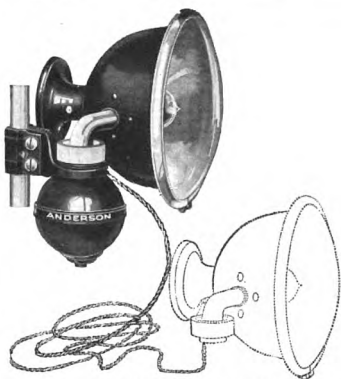
389 FIFTH STREET

MILWAUKEE, WIS

ANDERSON

AUTOREELITE

MORE THAN JUST A SPOTLIGHT

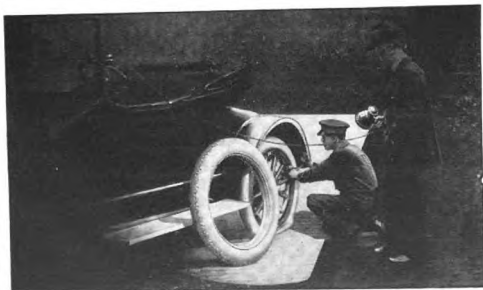


Model B (Double Shell)



Model C (Single Shell)

The AUTOREELITE is the only spotlight with an automatic extension trouble-light feature. This is a real necessity for country driving and a valuable feature at any time and place where trouble may occur. Show this to a motorist and he immediately appreciates its usefulness, for it robs touring of its most disagreeable feature—the fear of a breakdown on the road after dark.



DIRECTIONS—To use as a "trouble light" simply unscrew the knurled nut and withdraw the lamp to desired length. 12 feet of cord on an automatic reel. Cord winds and unwinds just like a curtain roller.

The Anderson Autoreelite is an accessory for which you'll find a ready sale.

Stocked by the best jobbers. If yours does not carry it, write us and we'll tell one who does, or supply you direct.

Write for complete details, list No. D-306-A and discounts.

Cat. No.	Model	Price
3130	B-6, without Mirror.....	\$8.75
3140	B-6, with Mirror.....	9.00
3141	B-7, with Mirror.....	10.00
3280	C-6, Single Shell.....	9.00
3281	C-7, Single Shell.....	10.00
3287	SC-7, All Nickel.....	15.00
3952	Mirror for Model C.....	1.00

ANDERSON ELECTRIC & EQUIPMENT COMPANY

154-160 WHITING STREET

CHICAGO, ILLINOIS



STANDARD EQUIPMENT ON ALL OF OUR FORD CARS

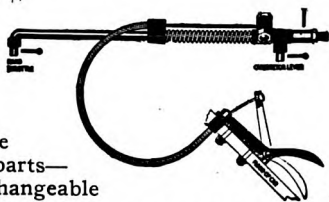
Each month adds many names to the list of firms who have thoroughly tested Williams Accelerator—and adopted it as standard equipment on their Ford cars and delivery trucks.

THE WILLIAMS ACCELERATOR FOOT THROTTLE

WILLIAMS ACCELERATOR makes driving your Ford easier. It is safer to use than the hand throttle—and saves gasoline.



Just as the self-closing faucet saves water, WILLIAMS ACCELERATOR saves gasoline. It automatically shuts off throttle when the brake is used and gas is not needed.



Only three
working parts—
all interchangeable

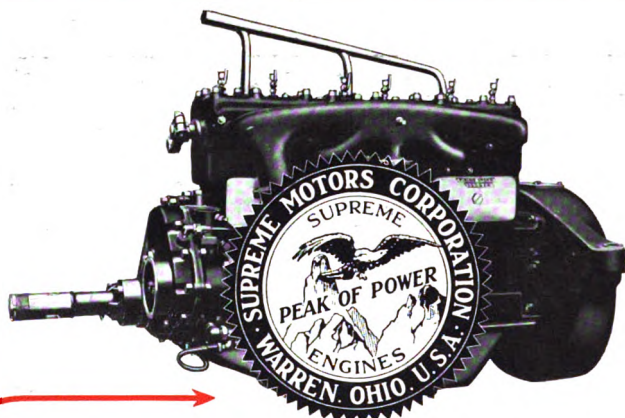
Built for
continuous
heavy-duty service

ORDER FROM YOUR JOBBER

Manufactured and distributed by

**WILLIAMS BROS. AIRCRAFT
CORPORATION**

SAN FRANCISCO



The SUPREME Eagle Seal is your guarantee

*of a strictly quality power unit produced
on a large scale production basis*

No mechanism can give more in the way of performance and economy than the experience back of it has made possible. Especially true is this of motor vehicle engines, in which must be incorporated the precise knowledge derived from the multifarious service-tests imposed by a host of critical users of widely dissimilar habits and intelligence.

Supreme engines embody the experience of fifteen years of successful engine-building and the designing and manufacturing technique that comes from the production of hundreds of thousands of efficient power units. They inspire in the man who sells them, quite as much as in him who uses them, that implicit confidence bred of years of consistently high-class manufacture.

MOTORS FOR AUTOMOBILES, TRUCKS AND TRACTORS

**SUPREME MOTORS CORPORATION
WARREN, OHIO
50 MILES FROM CLEVELAND**

Supreme Engines

"PEAK OF POWER"

PROTEX SIGNAL



SELF ACTING

**Flashes as Brightly in Sunshine
as it does in the Dark**

Whenever the driver presses down on brake pedal to slow down, stop or turn, Protex flashes a bright red STOP to cars behind. And the light stays on till brake is released.

The intense redness of this Protex STOP warning is 100% effective in bright sunshine, or thru rain or fog—as well as by night, because

Firstly, protex has a headlight bulb;

Secondly it has a highly-silvered parabolic reflector, same as the best spot-lights;

Thirdly and most important of all, it has a patent lens that magnifies the strength and penetration of the rays, many times over.

Protex signals automatically, effectively, at just the right moment; it leaves nothing for the driver to remember—or forget.

It is a self-seller; everybody sees it; everybody talks about it; everybody wants one.

DEALERS: Remit now for sample.
Write for proposition.

The Protex Signal Co.
Park Bldg., CLEVELAND, OHIO



\$10.00

(War Tax Paid)

Easily Applied





Seaco Automobile Fabrics and Threads ARE RIGHT—PLUS

SEACO FABRICS

are distinctive and superior in quality and sell at attractive prices in a competitive market.

The new 1921 color combinations and patterns in SEACO pure wool broadcloths now being shown will give that final touch of distinction and refinement sought by designers of fine motor coach work.

SEACO THREADS

are made by us at our own mill and are finished to suit the most exacting needs of Automobile Stitching.

SEACO refers by permission to

A Few Users of SEACO Fabrics and Threads

Auburn Automobile Co.	The Auburn
James Cunningham, Son & Co.	The Cunningham Car
Ford Motor Company	Ford Car
Limousine Body Company	Closed Bodies
Maxwell Motor Sales Corporation	"Maxwell"
Milburn Wagon Company	Automobile Bodies
Millspaugh & Irish	Motor Coaches
United Body Corporation	Distinctive Bodies

Perhaps SEACO can be of service to YOU

Seaman's & Cobb Co.

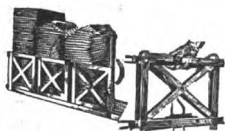
Boston

Branches: New York, St. Louis, Philadelphia, Cleveland, Rochester, Chicago

BERSTED PRODUCTS

KOMPAK FOLDING

Luggage Carrier



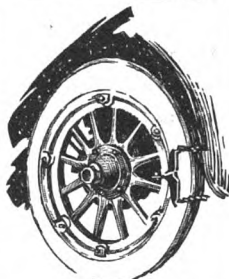
The last word in simplicity and convenience. Takes all the luggage needed without crowding tonneau. On or off in an instant, without tools. Folds flat and stows under seat cushion. Ask your dealer or send for circular.

LIST PRICE, EACH, \$4.50

JOBBERS: Write for Discount

Syde Gripper

MUD, SNOW, & SAND HOOKS



The Deeper They Sink, the Firmer They Grip
No need to pay \$10.00 to be hauled out of a hole. It's cheaper to carry a \$4.50 pair of "Syde-Grippers." They go on or off in a moment without trouble or tools. Perfect for all anti-skid purposes, but used in addition to chains by many who are wedded to the chain idea.

Make Even the Smallest Car a Giant of Strength in Mud
MANUFACTURED BY

BERSTED MANUFACTURING COMPANY

CHICAGO

765-771 MATHER STREET

ILLINOIS

"THE BERSTED"

Double Row Ball Thrust Bearing.

For Ford and Chevrolet Cars.



Perfectly balanced, carries load on two rows of balls, keeps gears perfectly meshed, insures quiet running with least wear. Ask your dealer or send for circular.

THE TRUCK TIRE PUMP

That Meets Every Requirement

Designed and built solely for heavy pressure duty

**Rigidly tested and strongly endorsed
by America's largest tire manufacturers**



Will consistently inflate 44x10 inch tires in less than 10 minutes

Not a particle of oil enters the cylinder

Not a particle of oil enters the tires

A marvel of power, strength and speed—Immediate deliveries

Necessary on Every Pneumatic Tired Truck

"Long Stroke"

AIR COMPRESSORS

A quality line supreme. Maximum air delivery. Quick Service.

Saves power. Less trouble.

Saves time and money for the user

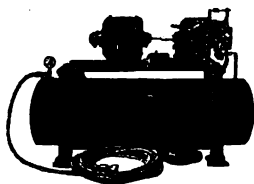
Wins confidence for the dealer

The most compact compressor made. The simplest design

Write for literature and prices, dealer's terms etc.

MOTOR STARTER AND AIR PUMP CO.

52-60 Dickerson Street
NEWARK, N. J.



Please mention The Automobile Trade Directory

HOLDERS, Suit Case or Luggage

(For attaching to running board.)

Ajax Trunk & Sample Case Co., 410 W. 125th St., New York, N. Y.
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
 Auto Bed Camp Mfg. Co., 2307 Pennsylvania St., Kansas City, Mo.
 Auto Luggage Carrier Co., S. Park St., Adams, N. Y.
 Badger Mfg. Corp., Milwaukee, Wis. "Handy." (See page 171.)
 Berated Mfg. Co., 765 Mather St., Chicago, Ill. "Kompak." (See page 515.)
 Blake Mfg. Co., South Bend, Ind. "Clamp-lock."
 Boyle Mfg. Co., Los Angeles, Cal. "E-Z," "Sure Grip." (See page 189.)
 Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Brown Stamping Co., Toledo, O.
 Buffington & Co., C. A., Berkshire, N. Y.
 Bulldog Luggage Guard Co., 39 Elm St., Nashua, N. H.
 Chicago Tool & Kit Mfg. Co., 12 N. Market St., Chicago, Ill. "Out-O-Site."
 Clamplock—See Blake Mfg. Co.
 Dependable—See Pioneer Automotive Co.
 E-Z—See Boyle Mfg. Co.
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 695.)
 Grip-Tite Holder Co., Norwich, N. Y.
 Halladay Co., L. P., Decatur, Ill. (See page 171.)
 Handy—See Badger Mfg. Corp.
 Hasco Mfg. Co., 1627 Wazee St., Denver, Colo.
 Ideal—See Schwenn Iron Works.
 Interlock Hardware Co., 342-48 York St., New Haven, Conn.
 Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.
 Kittle Mfg. Co., 641 Sante Fe Ave., Los Angeles, Cal. (See page 519.)
 Auto Pak—See Kittle Mfg. Co.
 Kompak—See Berated Mfg. Co.
 Loxtite Carrier Co., 315 Main St., Niagara Falls, N. Y.
 Lug-Rac—See Xcel Specialty Co.
 Marquette Mfg. Co., St. Paul, Minn. (See page 517.)
 Marvel Clamp Co., 76 First St., San Francisco, Cal.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Metal Products Mfg. Co.—See Pioneer Automotive Co.
 Mill City Co., Minneapolis, Minn.
 Out-O-Site—See Chicago Tool & Kit Mfg. Co.
 National Carrier Co., 707 Second Ave., S., Minneapolis, Minn.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Pioneer Automotive Co., 245 W. 55th St., New York, N. Y. (Sole Representatives for Metal Products Mfg. Co., Seward, N. J. "Dependable.")
 Rust Mfg. Co., Marshalltown, Iowa.
 Schwenn Iron Works, William, 822-32 Lexington Ave., Brooklyn, N. Y. "Ideal." (See page 329.)
 Standley Skid Chain Co., Soons, Ia. (See page 381.)
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
 Sturdy—See Gray-Heath Co.
 Sure Grip—See Boyle Mfg. Co.
 Tourist Auto Equipment Co., Dahlgren, Ill.

Viktry Sales Co., 389 Fifth St., Milwaukee, Wis. (See page 509.)
 Xcel Specialty Co., 88 Lewis Bldg., Buffalo, N. Y. "Lug-Rac."

HOLDERS, Tire

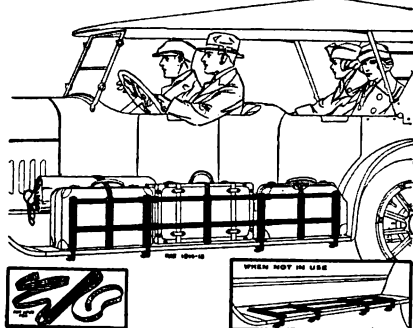
(For carrying spare tires on cars, including Demountable Rims)

Amco—See Chicago Electric Mfg. Co.
 American Traction Ring Co., White Plains, N. Y.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Victor," "Duplex" and "Simplex" Holders.) (See page 245.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Au-To Compressor Co., Wilmington, O. "Oro."
 B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook American."
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Boko—See Defiance Welding Co.
 Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Clayton Co., 136 W. 53d St., New York, N. Y. "Hoover."
 Climax—See Strifler & Shannon.
 Dayton Wire Wheel Co., 325 Miami Chapel Rd., Dayton, O.
 Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
 Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 943.)
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Dow Wire & Iron Works, Louisville, Ky. (See page 169.)
 Duplex—See International Stamping Co.
 Easy Way—See Lawrence Mfg. Co.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Emco Mfg. Co., Binghamton, N. Y. "Tabber." (See page 521.)
 Erp—See Sedgwick Sales Co.
 Essandee Corp., 330 W. 16th St., Los Angeles, Cal. (See page 855.)
 Ferris Auto-Carrier Co., 39 S. Seventh St., Philadelphia, Pa. "Quick-Action."
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Halladay Co., L. P., Decatur, Ill. (See page 171.)
 Highton & Sons Co., Wm., Nashua, N. H.
 Hoover—See Clayton Co.
 Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.
 Horrocks Iron Works, 234 N. Broad St., Philadelphia, Pa. "Liberty."
 Ideal—See Letmont Spare Tire Carrier Co.
 Interlock Hardware Co., 342-48 York St., New Haven, Conn.
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankco."
 International Stamping Co., 400 N. Leavitt St., Chicago, Ill. "Victor," "Duplex," "Simplex." (See page 521.)
 Lawrence Mfg. Co., F. K., 20 E. Lake St., Chicago, Ill. "Easy Way." (See page 1075.)
 Letmont Spare Tire Carrier Co., 1221 Bedford Ave., Brooklyn, N. Y. "Ideal."
 Liberty—See Horrocks Iron Works.
 McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
 New Era Spring & Specialty Co., 51-55 Cottage Grove Ave. S. W., Grand Rapids, Mich. "Sly Perfect."
 Oro—See Au-To Compressor Co.
 Packer Auto Specialty Co., 1430 S. Michigan Ave., Chicago, Ill. "Ray."

Everything is listed under the NOUN or principal word

Marquette Luggage Carrier

Marquette Luggage Carrier LENGTH ADJUSTABLE



It is without question one of the most popular and most useful accessories on the market today. A Luggage Carrier must have all of the following three points embodied in it to give maximum service to the user.

- First—Capacity**
- Second—Safety**
- Third—Convenience**

The Marquette Luggage Carrier gives all three of these and more.

We co-operate with both the dealer and jobber thru not only our advertising, but also thru dealer and jobber helps of various nature. Fits all cars. Folds down neatly to the running board when not in use, being scarcely noticeable. Attached quickly without the use of tools and without mutilation of running board. Once installed always ready.

Provides liberal storage for all kinds of luggage, camping equipment, parcels, etc., where they will not crowd the seating capacity of your car. Keeps them safe from loss or damage.

The strap feature of the Marquette Luggage Carrier holds the luggage absolutely stationary. The luggage is strapped to the Carrier and securely held in place away from the body of the car. The straps are adjustable and can be easily detached.

Made of high grade steel, neat in design. Nothing to break or get out of order. Finished in black enamel, furnished as follows:

4 ft. size adjustable from 27 in. to 48 in.....	weight 5½ lbs.....	List price \$4.50
5 ft. size adjustable from 36 in. to 60 in.....	weight 7¾ lbs.....	List price 5.00
5 ft. size furnished with three straps.....	weight 8½ lbs.....	List price 6.00

"LITTLE GIANT SPLIT RIM TOOL"

The Little Giant Rim Tool performs every function of the task of contracting and expanding split rims with ease, speed and dependability.

The rim is placed in a suitable position in the grips of the Little Giant. A few turns of the handle contracts the rim and the tire is easily lifted off. A reverse motion of the handle will expand the rim, locking it securely in place.

It is designed to handle the most difficult tasks in expanding and contracting the different split rims used today. Repair and garage men are quick to appreciate the value and economy of this device. The investment involved will be saved a good many times figuring the cost of time, labor and damaged rims.

The stand is built of strong steel angles with proper reinforcements. A one inch square acme thread spindle is used, which positively will do the work required of it. The gripping parts are made of high grade malleable iron. Nothing but heavy, durable material is used throughout.

The tracks or slides in which the arms travel prevent the tool from buckling or the arms from sliding. The distance between gripping points are equal at all times. This prevents damaged or sprung rims. The mechanism of the tool is very simple. Nothing to break or get out of order. The tool is guaranteed against defect in material or workmanship.

The Little Giant will handle all styles and sizes of split rims made.

The machine comes knocked down into a comparatively small box, convenient for reshipping, simple to set up.

We guarantee the Little Giant Rim Tool to give satisfaction.

**DEALERS
NET PRICE \$30.00**

Marquette Products Sold by All Live Jobbers

MARQUETTE MFG. CO.

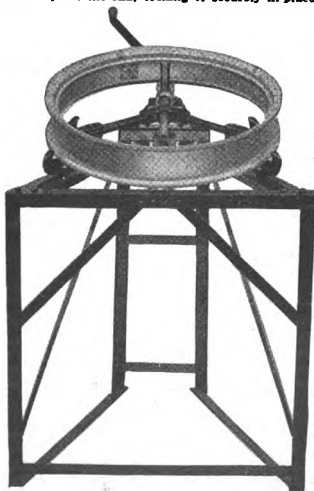
ST. PAUL

(Sole Manufacturers)

MINN.

Eastern Branch Office:

Marquette Mfg. Co., 51 East 42d Street, New York City



Please mention The Automobile Trade Directory

HOLDERS, Tire (Continued)

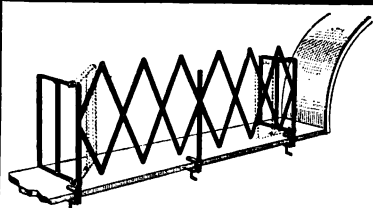
Quick-Action—See Ferris Auto-Carrier Co.
 Ray—See Packer Auto Specialty Co.
 Sedgwick Sales Co., 1405 Sedgwick Ave., New York, N. Y. "Erp."
 (See page 518.)
 Simplex—See International Stamping Co.
 Sjöholm, N. P., 11 Westmoreland Pl., St. Louis, Mo.
 Sly Perfect—See New Era Spring & Specialty Co.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Smith & Gregory, 121-23 W. 52d St., New York, N. Y.
 Spook American—See B. & A. Machine Co.
 Striffler & Shannon, 1810-12 W. Pico St., Los Angeles, Cal. "Chimax."
 (See page 510.)
 Taber—See Emco Mfg. Co.
 Trex—See Trexler Co.
 Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributors for Twinlock Co., Philadelphia, Pa. "Trex.")
 (See page 521.)
 Twinlock Co.—See Trexler Co.
 Victor—See International Stamping Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 70.)
 Yankee—See International Metal Mfg. Co.

HOLDERS, Tire, for Fords

(For carrying spare tires on cars, including demountable rim and wheel carriers)

American Metal Parts Mfg. Co.—See Fulton Co.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Simplex" and "Duplex" Holders.)
 (See page 243.)
 Attwood Brass Works, Sixth St. and Front Ave., Grand Rapids, Mich.
 (See page 470.)
 Au-To Compressor Co., Wilmington, O. "Ora."
 Auto Forge Sales Co., 80 King Ave., Columbus, O. "Universal."
 Autoguard—See Stewart-Warner Speedometer Corp.
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)
 B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook."
 Billwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)
 Dayton Wire Wheel Co., 825 Miami Chapel Rd., Dayton, O.
 Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich.
 Duplex—See International Stamping Co.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber." (See page 521.)
 Ferris Auto-Carrier Co., 29 S. Seventh St., Philadelphia, Pa. "Quick-Action."
 Fox Automotive Products Corp., A. H., 4700 N. 18th St., Philadelphia, Pa. "Liberty."
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis.) (See page 1020.)
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 249.)
 Gem City—See Meeker Mfg. Co.
 Globe Machine & Stamping Co., Cleveland, O. "Lockfast." (See page 1039.)
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 695.)
 Halladay Co., L. P., Decatur, Ill.
 (See page 171.)
 Hasco—See Howard Auto Specialties Co.
 Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 573.)
 Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.
 Howard Auto Specialties Co., Swampscott, Mass. "Hasco."
 Humboldt—See Republic Auto Parts Co.
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
 International Stamping Co., 400 N. Leavitt St., Chicago, Ill. "Duplex," "Simplex." (See page 521.)
 Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.
 Korect—See New Era Spring & Specialty Co.
 Liberty—See Fox Gun Co.
 Lockfast—See Globe Machine & Stamping Co.
 Lyon—See Metal Stamping Co.
 McKinnon Dash Co., Buffalo, N. Y.
 (See page 403.)
 Maryland Metal Products Co., Hagerstown, Md.
 Meeker Mfg. Co., Linden & Huffman Aves., Dayton Co. "Gem City."
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon."
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 New Era Spring & Specialty Co., 51-56 Cottage Grove St. S. W., Grand Rapids, Mich.
 "Sly," "Korect," "Perfection."
 Oro—See Au-To Compressor Co.
 Ospeco—See Michigan Auto Products Co.
 Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill.
 Perfection—See New Era Spring & Specialty Co.
 Quick-Action—See Ferris Auto-Carrier Co.
 Ray—See Packer Auto Specialty Co.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt," "Sterling."
 Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.
 Simplex—See International Stamping Co.
 Sly—See New Era Spring & Specialty Co.
 Sly Mfg. Co., W. W., Cleveland, O.
 Spook—See B. & A. Machine Co.
 Standard Motor Parts Co., 1420 S. Michigan Ave., Chicago, Ill. (Sole distributors for Packer Auto Specialty Co., Chicago, Ill.)
 "Ray."
 Sterling—See Republic Auto Parts Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard."
 (See page 1063.)
 Sturdy—See Gray-Heath Co.
 Taber—See Emco Mfg. Co.
 Trex—See Trexler Co.
 Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributors for Twinlock Co., Philadelphia, Pa. "Trex.")
 (See page 521.)
 Twinlock Co.—See Trexler Co.
 Universal—See Auto Forge Sales Co.
 Vantage—See Victor Steel Stamping Co.
 Victor Steel Stamping Co., 3102 Downing St., Denver, Colo. "Vantage."

Everything is listed under the NOUN or principal word



PAT. NO. 1384502, MAY 20, 1919

THE KITTLE COLLAPSIBLE AUTO LUGGAGE CARRIER

Over 60,000 Sold Last Year

MATERIAL—

Upright standards— $\frac{3}{4} \times \frac{1}{2} \times \frac{1}{2}$ Channel Iron
Cross Bars— $\frac{3}{4} \times \frac{1}{2}$ Steel Bars
Fender Clamps— $\frac{7}{8} \times \frac{1}{2}$ Steel Bars

Size WILL FIT ALL CARS

Height—17" above running board

Folded— $7\frac{1}{2} \times 22$ "

Weight—13 lbs. packed

Finish—Hard baked black enamel

KITTLE MFG. CO.

Chicago

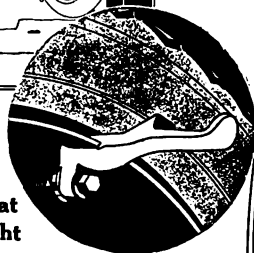
Los Angeles

2721 S. Michigan Av.

641 Santa Fe Av.

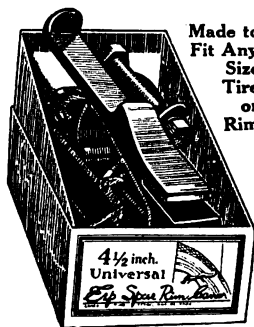


The circle illustrates one of the three units installed ready to carry a second spare.



An Extra Spare Tire Carrier That Sells on Sight

Every car owner who sees an Erp Spare Rim Carrier wants a set. The bolt and nut construction is so simple that all you need is a wrench to install it on the rim of the first spare. Both tires can be removed without detaching carrier. Eliminates straps, rattle and chafing. Most good jobbers stock it.



Retails
For
\$3.50
A Set
Complete.

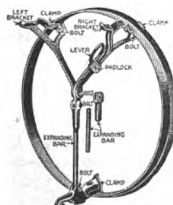
\$4.00
West of
The
Rockies.

SEDGWICK SALES COMPANY
1405 Sedgwick Ave., New York City

Erp Spare Rim Carrier
"CARRY TWO SPARES AND BE SAFE"

CLIMAX TIRE CARRIERS

FOR TWO SPARE TIRES



Price, \$12.00

Can be attached in five minutes to cars using felloe band single carriers. By simply clamping to the felloe band it makes it possible to carry either one or two tires without the necessity of removing nuts or unfastening straps. It also embodies a locking device with which a padlock can be used preventing the removal of either tire while locked.

Manufactured by

STRIFLER & SHANNON

1810-1812 West Pico Street, LOS ANGELES

Please mention The Automobile Trade Directory

HOLDERS, Tire for Fords (Continued)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
Yankee—See International Metal Mfg. Co.

HOLDERS, TOOL—See Holders, Lathe and Planer Tool**HOLDERS, Top**

(For holding or clamping tops securely when in folded or down position; See also Straps, Leather)

Adams—See Rock Island Mfg. Co.
Auto Specialties Mfg. Co., St. Joseph, Mich. "Blair." (See page 247.)
Blair—See Auto Specialties Mfg. Co.
Rock Island Mfg. Co., Rock Island, Ill. "Adams." (See page 1033.)
Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 709.)
Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

HOLDERS, TOP FOR FORDS—See Clamps, Top Bow**HOLDERS, Tractor Clutch**

Standard Farm Implement Co., 110 W. Tenth St., Des Moines, Iowa.

HOLDERS or STOCKS, Transmission Drum for Fords

(Holder with handles to clamp on drum so that it may be easily turned when reaming bearing bushing with stationary reamer. For Bench Clamps or Vices for Transmission Drums—See Clamps or Vices, Transmission Drum for Fords)

Railway Specialty Co., Atchison, Kans. "Rysco."
Rysco—See Railway Specialty Co.

HOLDERS, Watch

(See also Olocks, Dashboard)

Ajax—See Newark Watch Case Material Co.
Bryan's Department Store, Staunton, Va. "Time Clutch."
Burlleigh, Geo. K., Penacook, N. H.
Cowles & Co., C., New Haven, Conn.
Economic—See Jay & Dee Specialty Co.
Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Economic."
Newark Watch Case Material Co., 15-19 Ward St., Newark, N. J. "Ajax."
Newton Mfg. Co., Church St., Plainville, Conn.
Nojar—See Pennsylvania Rubber Co.
O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
Pennsylvania Rubber Co. of America, Jeanette, Pa. "Nojar."
Time Clutch—See Bryan's Department Store.

HOLDERS, Watch, for Fords

(See also Olocks, Steering Wheel)

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)

HOLDERS or CARRIERS, Spare Wheel, for Fords

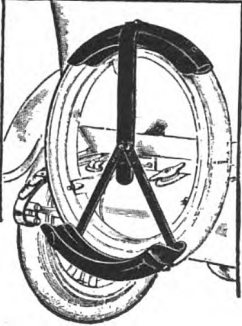
Better—See New Era Spring & Specialty Co.
Blitwell Accessories Co., 401 E. 23rd St., New York, N. Y.
New Era Spring & Specialty Co., 51-55 Cottage Grove St. S. W., Grand Rapids, Mich. "Better."
Simplex Wire Wheel Co., Cadillac, Mich. (See page 1059.)

HOLDING STANDS, GENERATOR—See Stands, Generator Holding**HOOD CLAMPS FOR FORDS—See Clamps, Hood****HOOD COVERS—See Covers, Radiator****HOOD FASTENERS—See Fasteners, Hood; also Fasteners, Ventilating Hood****HOOD FASTENERS FOR FORDS—See Clamps, Hood****HOOD FORMING MACHINES—See Machines, Hood Hinge Forming****HOOD HINGES—See Hinges, Hood****HOOD LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lace****HOOD LATCHES—See Fasteners, Hood****HOOD SUPPORTS—See Supports, Hood****HOOD VENTILATOR FORMING MACHINES—See Machines, Louvre Forming****HOODS, Engine**

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.
Automotive Sheet Metal Co., Factory St. and Grand Trunk R. R., Kalamazoo, Mich. "Maco."
Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

Fits over any rear tire
Carries as many extra tires as desired



Patented
Sept. 16, 1917, Jan. 27, 1920, Aug. 10, 1920

2-R-3 Adjustable Tire Carriers

The second extra tire is supported by the first, the third by the second, etc. Strap all together on both sides. Write for further particulars; our full line will interest you.

The International Stamping Co.
400 N. Leavitt Street Chicago, Ill., U. S. A.

TREX

Twinlock
Tire
Carrier

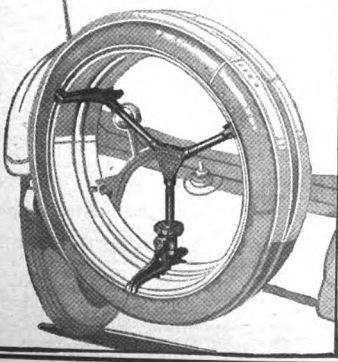
Carries Two Tires
Makes Them Theftproof

Underwriters
Laboratories Inspected

REDUCES INSURANCE

The Trex Twinlock Tire Carrier attaches to any circular single carrier. It carries two tires, guarding both against theft. It is an innovative device that every motorist wants.

THE TREXLER CO., 1418 Walnut St., Philadelphia



EMCO PRODUCTS



Taber Model G Muffler

A small, light but very strong muffler that cannot be blown out.

Cast of gray iron in two pieces.

Joints perfectly ground insuring against leak and rattle.

Easily installed.

Price\$2.25
West of Rockies..... 2.65



Taber Tire Carrier
Strong, light and durable — guaranteed for life of car. Toggle locking device makes tire easy to remove but theft proof when locked. Adopted as standard equipment on Ford enclosed cars.

Prices

F. D. 3—Single Demountable for Fords...\$7.00
F. D. 4—Double Demountable for Fords... 8.50
F. C. 3—Single Demountable for Chevrolets. 7.00
F. C. 4—Double Demountable for Chevrolets 8.50
Prices F. O. B. Williamsport, Pa.
Specify Types in Ordering.

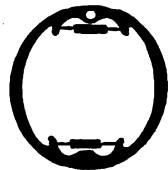


Taber Spring Support
Clamp

For Chevrolets, Saxons, and all other cars equipped with quarter elliptic springs.

A positive insurance against breakage of spring bolts on all cars equipped with Quarter Elliptic Springs.

Retail price, \$2.25 each, \$4.50 per pair.



Taber Unlined Brake
Shoe for Fords

Comes in one or two pieces as desired.

Made of special formula gray iron casting and reinforced at points of greatest wear.

Every pair tested on a Ford Brake Drum before leaving factory, thus insuring perfect fit without waste. Retail price per set, \$1.00.

The Taber Pedal

The most versatile item of its kind on the market—adapts itself to a score of uses.

Note extra long leverage of bottom Thrust Arm.

Automatic Locking device holds Pedal down when in use—a kick of the heel releases it.

Made of special formula gray iron casting and heavy wearing parts of malleable iron to insure against breakage due to sudden strain.

Retail price, each.....\$0.35

DEALERS—Write us today for our beautifully illustrated catalog and terms to the trade.

The Emco Manufacturing Co.
Main Office & Works: Binghamton, N. Y.

Please mention The Automobile Trade Directory

HOODS, Engine (Continued)

Brummeler-Ruggles Metal Products Co., 1315
 Ionia Ave., S. W., Grand Rapids, Mich.
 Brummeler's Sons Co., Wm., 413 Ionia Ave.,
 S. W., Grand Rapids, Mich. "Brusco."
 Brusco—See Brummeler's Sons Co., Wm.
 Bush Mfg. Co., Hartford, Conn.
 (See page 787.)
 Central Service Corp., 1907 Merchants
 Bank Bldg., Indianapolis, Ind. (Sales
 Representative.) (See page 335.)
 Chicago Mfg. Co., 1458-64 Michigan Ave., Chi-
 cago, Ill.
 Clayton & Lambert Mfg. Co., 10567 Kno-
 dell Ave., Detroit, Mich. (See page 1003.)
 Columbus Auto Brass Co., Columbus, O.
 (See page 477.)
 Cornwall Mfg. Co., Cleveland, O.
 (See page 937.)
 Detroit Auto Specialty Corp., 6209 Green-
 wood Ave., Detroit, Mich.
 Field Body Corp., Owosso, Mich.
 (See page 129.)
 Fostoria Pressed Steel Co., Fostoria, O.
 (See page 465.)
 Gender, Paeseko & Frey Co., 1365-1700
 St. Paul Ave., Milwaukee, Wis.
 (See page 935.)
 Hayes Mfg. Co., 4525 Maybury Grand Ave.,
 Detroit, Mich.
 Hersh & Bro., 657 Mill St., Allentown, Pa.
 Jackson Metal Products Co., 601-15 Liberty
 St., Jackson, Mich.
 Johnson's Automobile Sheet Metal Works, W.
 N., 630-28 South J St., Richmond, Ind.
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New
 York, N. Y.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan
 Ave., Chicago, Ill.
 Kirk & Blum, 2846 Spring Grove Ave., Cin-
 cinnati, O.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati,
 O. "Lawco." (See page 125.)
 Lima Sheet Metal Products Co., 308 E. Wayne
 St., Lima, O.
 Maco—See Automotive Sheet Metal Co.
 Metal Auto Parts Co., Chase & Henry Sts.,
 Indianapolis, Ind.
 Michigan Stamping Co., 11631 Mack Ave.,
 Detroit, Mich.
 Moline Pressed Steel Co., Fifth St., East Mo-
 line, Ill.
 Morrison Steel Products Co., 26-28 E. North
 St., Buffalo, N. Y.
 Motors Metal Mfg. Co., 5936 Milford Ave.,
 Detroit, Mich.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Murray Mfg. Co., J. W., 571 Clay Ave., De-
 troit, Mich.
 Paragon Auto-Parts Mfg. Co., 506 W. 52d St.,
 New York, N. Y.
 Perfex Radiator Co., Racine, Wis.
 Progressive Sheet Metal Co., 1976-84 Cen-
 tral Ave., Cincinnati, O.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 S.-J.—See Shotwell-Johnson.
 Saginaw Sheet Metal Works, 2060 Genesee
 Ave., Saginaw, Mich.
 Sargeant Mfg. Co., New & Summit Sts., New-
 ark, N. J.
 Shotwell-Johnson, Minneapolis, Minn.
 "S.-J." (See page 349.)
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis,
 Minn.
 Universal Metal Parts Mfg. Co., 602-04 W.
 52d St., New York, N. Y.

Western Metal Specialty Co., Milwaukee,
 Wis. (See page 657.)
 Wright Cooler & Hood Mfg. Co., 4968-70 N.
 Clark St., Chicago, Ill.
 York Corrugating Co., York, Pa.
 (See page 931.)

HOODS, Engine, for Fords

(Including both standard and stream line hoods)
 A. B. & B. Sheet Metal Works, 2300-02 Fond
 du Lac Ave., Milwaukee, Wis.
 Candler Radiator Co., 1084-86 Jefferson
 Ave., E., Detroit, Mich. (See page 633.)
 Empire Auto Specialty Co., 1426 Blue
 Island Ave., Chicago, Ill.
 (See page 137.)
 Field Body Corp., Owosso, Mich.
 (See page 129.)
 Kleber-Sherman Mfg. Co., 2807 S. Michigan
 Ave., Chicago, Ill.
 Lawco—See Michigan Auto Products Co.
 Lawson Co., F. H., Dept. D., Cincinnati,
 O. (See page 125.)
 Livingston Radiator Corp., 718 N. Front St.,
 Plainfield, N. J. "Rolsford."
 Michigan Auto Products Co., 2008 Grand
 River Ave., Detroit, Mich. "Lawco."
 Motors Metal Mfg. Co., 5936 Milford Ave.,
 Detroit, Mich.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Rolsford—See Livingston Radiator Corp.
 Superior Lamp Mfg. Co., 148-50 W. 52d St.,
 New York, N. Y.

HOODS, MOTOR—See Hoods, Engine

HOODS, Radiator, for Fords

(Pressed or stamped hoods or covers to apply over
 radiator to give a V or stream line appearance)
 Columbia Auto Radiator Co., 902-06 Race St.,
 Cincinnati, O.
 Corcoran Mfg. Co., Section & Foraker Aves.
 (Norwood), Cincinnati, O. "Peerless."
 Dunham Co., Thos., Aurora, Ill.
 (See page 163.)
 Empire Auto Specialty Co., 1426 Blue
 Island Ave., Chicago, Ill.
 (See page 137.)
 Field Body Corp., Owosso, Mich.
 (See page 129.)
 Lawco—See Michigan Auto Products Co.
 Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati, O.
 "Lawco." (See page 125.)
 Michigan Auto Products Co., 2008 Grand
 River Ave., Detroit, Mich. "Lawco."
 Monarch Radiator & Fender Works, 632-38
 Ellis St., San Francisco, Cal.
 Peerless—See Corcoran Mfg. Co.
 Superfect—See Superior Lamp Mfg. Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St.,
 New York, N. Y. "Superfect."

HOODS, Tractor

Champion Milk Cooler Co., 52-60 Owego St.,
 Cortland, N. Y.
 Chicago Mfg. Co., 1458-64 Michigan Ave.,
 Chicago, Ill.
 Derby Coppersmithing & Sheet Metal Con-
 tracting Co., First & Caroline Sts., Derby,
 Conn.
 Field Body Corp., Owosso, Mich.
 (See page 129.)
 Hersh & Bro., 657 Mill St., Allentown, Pa.

Everything is listed under the NOUN or principal word

Jefferson DROPPED FORGED Steel Wheels

for
Passenger Cars

**One Piece
Lighter in Weight
Indestructible**



The Jefferson Drop Forged Steel Wheel for passenger cars; made in **One Piece**—hub, spokes, brake drum and felloe. There are no bolts, nuts, rivets, welds or joined sections. They are lighter than all other wheels of standard construction. They possess all the worthy features of other types of wheels; have none of their faults and will outlast all of them. They are enameled, not painted. They will be made to any specification desired by automobile manufacturers.

Literature Sent Upon Request



6 Throw Crankshaft—Forged in Position

Four Throw Crankshafts, Camshafts, Connecting Rods, Gear Blanks, Axles, Steering Knuckles, Steering Arms, Fly Wheels, Miscellaneous Automobile Forgings, Correctly Forged to specifications, and properly Heat Treated.

The Jefferson Forge Products Co.

DETROIT, MICHIGAN

Russell A. Alger, President; Frederick M. Alger, Vice-President; Chas. E. Wade, Vice-President and General Manager; F. Archer Hinchman, Secretary and Treasurer

Please mention The Automobile Trade Directory

HOODS, Tractor (Continued)

Kelle Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Moore Mfg. Co., Concrete & Water Sts., Watertown, Ia.

York Corrugating Co., York, Pa.
(See page 951.)

HOOKS, MUD—See Chains or Grips, Non-Skid

HOOKS, Safety Tow

Ideal—See Reinhold Co.

Reinhold Co., John J., Marietta, Pa. "Ideal."

HOOKS, Snap

Anchor—See North & Judd Mfg. Co.

Covert Mfg. Co., Troy, N. Y.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

Wilcox, Crittenden & Co., 1 S. Main St., Middletown, Conn.

HOOKS, TIRE CHAIN—See Fasteners, Tire Chain

HOOKS, TOW—See Hooks, Safety Tow

HORIZONTAL BORING MACHINES—See Machines, Horizontal Boring

HORN BULBS—See Bulbs, Rubber Horn

HORN BUTTONS—See Buttons, Push

HORN BUTTONS FOR FORDS—See Buttons, Special Horn

HORN PEDALS—See Pedals, Horn

HORN REEDS—See Reeds, Horn

HORN SCREENS—See Screens, Horn

HORN SWITCHES—See Switches, Horn

HORN TUBES—See Tubing, Flexible

HORN VALVES—See Valves, Muffler Cut-out

HORNS, Bulb

Arkay—See Riley-Klots Mfg. Co.

Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

HORNS, Electric

(Motor driven and vibrator type horns)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O.

American Electric Co., 6401 S. State St., Chicago, Ill. "Samson."

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount." "Ryt-O-Way." (See page 525.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill.
(See pages 181 and 529.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for United Electrical Mfg. Co., Adrian, Mich. "Trojan.")

Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone."
(See page 529.)

Economy—See Premier Electric Co.

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 439.)

General Phono Mfg. Co., Elyria, O.
(See page 189.)

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Reacto."

Inter-State Machine Products Co., 58 Allen St., Rochester, N. Y. "Sterling."

Klaxon Co., Newark, N. J.
(See page 525.)

Minerva Mfg. Co., Minerva, O.

Newtone—See E. A. Laboratories.

North East Service, Inc., Rochester, N. Y. (Sole Distributors for North East Electric Co., Rochester, N. Y. (See page 525.)

O'Brien Electrophone Co., Hallowell, Me.

Paramount—See Auto Metal Products Co.

Piel Co.—See Cassidy Co.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Economy."

Reacto—See Holtzer-Cabot Electric Co.

Ryt-O-Way—See Auto Metal Products Co.

Samson—See American Electric Co.

Schwarze Electric Co., Adrian, Mich.
(See page 527.)

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Sterling—See Inter-State Machine Products Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1065.)

Trojan—See C. A. S. Engineering Co.

Turner Electric Supply Co., 18-20 S. 20th St., Birmingham, Ala.

United Electrical Mfg. Co.—See C. A. S. Engineering Co.

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.

HORNS, Electric, for Fords

(Motor driven and vibrator type horns)

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 525.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill.
(See pages 181 and 529.)

Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)

Clero—See Fitzgerald Mfg. Co.

Everything is listed under the NOUN or principal word

"PARAMOUNT" IMPROVED AUTO WARNING SIGNALS

Patented construction assures infallible operation. Slight touch of plunger produces a loud, distinct and voluminous warning of great sound-carrying capacity, due to direct action on pinion shaft. Other patented features make for durability and superiority.

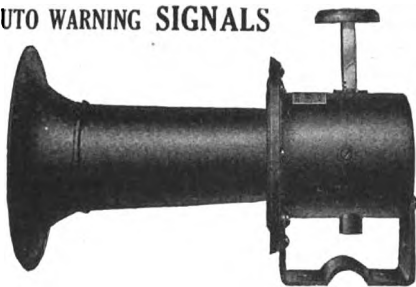
Horns for all purposes—Electric (motor-driven) and hand operated.

Circulars and trade discounts on application

Auto Metal Products Co., Inc.

432 East 71st Street

New York City



Windshields AND Body-Glass

Our 3/16" automatic, flat, drawn glass windshields are cut and ground ready to fit into frame. Now used on Fords and many other types of popular cars. Orders filled immediately, direct or to your customer. Big supply always on hand.

Ford Agents, Auto Supply Jobbers and Dealers, write for Jobbers' Price List.

ROYAL GLASS WORKS

120-6 Wooster Street, New York

Telephone—Spring 178-171



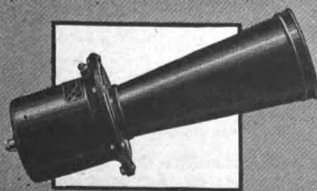
For every type of Passenger Car, Truck, Motorcycle, there is a Klaxon Warning Signal. And a Klaxon is unfailing in action, at all times, under all conditions.

Klaxons give that sharp, distinct warning sound that always gains the right of way.

And the complete line of Klaxon Warning Signals will easily gain and retain for you the right of way in sales.

KLAXON

Company Newark, N.J.



NORTH EAST HORN

DISTRIBUTED TO THE TRADE BY
NORTH EAST SERVICE INC.

ROCHESTER, N.Y.

ATLANTA	DETROIT	SAN FRANCISCO
CHICAGO	NEW YORK	KANSAS CITY
WINDSOR, ONT. CANADA		PARIS, FRANCE

Please mention The Automobile Trade Directory

HORNS, Electric, for Fords (Continued)

E. A. Laboratories, Inc., Brooklyn, N. Y.
"Newtone," "Handphone."
(See page 529.)

Fitzgerald Mfg. Co., Torrington, Conn.
"Clero." (See page 439.)

General Phone Mfg. Co., Elvira, O.
(See page 189.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Klaxon Co., Newark, N. J.
(See page 525.)

Newtone—See E. A. Laboratories.

Piel Co.—See Cassidy Co.

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)

Liberty—See Stiles-Gilliland Mfg. Co.

Melotone—See Duplex Machine Co.

Mormiles Co., 416 Sherman St., Chicago, Ill.

Nopowerloss—See Illinois Brass Mfg. Co.

Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. (See page 701.)

Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho," "Jubilee."

Richfield Mfg. Co., 1912 Pine St., St. Louis, Mo. "Autobird."

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Safety—See Sampson Mfg. Co.

Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill. "Safety."

Serum & Co., Chas. H., 3301 W. Chicago Ave., Chicago, Ill.

Stiles Mfg. Co., St. Louis, Mo. "Liberty."
(See page 527.)

T-N-T—See Inter-State Tool & Mfg. Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Husk."
(See page 263.)

HORNS, Engine Operated

American Strombos Co., 1-5 S. 18th St., Philadelphia, Pa. "Strombos."

Strombos—See American Strombos Co.

HORNS, Exhaust

(Tube Horns or Omnes and Whistles)

Aermore—See Fulton Co.

Amco—See Chicago Electric Mfg. Co.

American—See Clark, Alfred H.

Arkay—See Riley-Klots Mfg. Co.

Autobird—See Richfield Mfg. Co.

Autochime—See Gray-Hawley Mfg. Co.

B & B Mfg. Co., 2823-25 Arsenal St., St. Louis, Mo.

Bailey Co., W. J., Newark, N. J.

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Brookins Mfg. Co., Dayton, O.

Big Four Horn Co., Watseka, Ill.

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 527.)

Chicago Electric Mfg. Co., 523-29 Van Buren St., Chicago, Ill. "Amco."

Clark, Alfred H., 1307 Howard Ave., Bridgeport, Conn. "American."

Duplex Machine Co., 93 Lafayette St., Newark, N. J. "Melotone."

Eco Signal Mfg. Co., 501 S. Dearborn St., Chicago, Ill.

Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore."
(See pages 1017 to 1022.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, O.

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich. "Autochime."

Husk—See Western Brass Mfg. Works.

Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill. "Nopowerloss."

Inter-State Tool & Mfg. Co., 3419-21 Rutger St., St. Louis, Mo. "T-N-T."

Jericho—See Randall-Falchney Co.

Jubilee—See Randall-Falchney Co.

HORNS, Exhaust, for Fords

(Tube Horns or Omnes and Whistles)

Aermore—See Fulton Co.

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 137.)

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 527.)

Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore."
(See pages 1017 to 1022.)

Jericho—See Randall-Falchney Co.

Jubilee—See Randall-Falchney Co.

Klaxon Co., Newark, N. J.

(See page 525.)

Minerva Mfg. Co., Minerva, O.

Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho," "Jubilee."

Stiles Mfg. Co., St. Louis, Mo.
(See page 527.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.

(See page 263.)

HORNS, HAND—See Horns, Bulb; also Horns, Mechanical

HORNS, Mechanical

(Hand operated diaphragm horns; for Reed Horns—See Horns, Bulb)

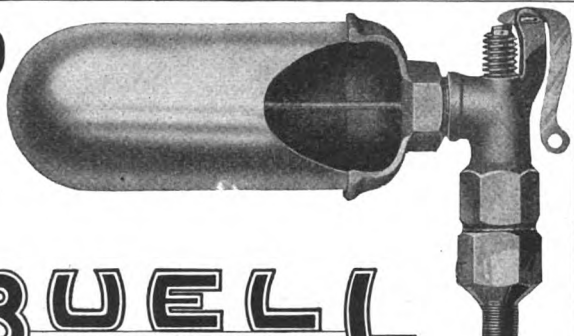
A-K—See Angsten-Kox Co.

American Electric Co., 6401 S. State St., Chicago, Ill. "Samson-Tiger," "Samson-Lion."

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (See page 537.)

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 525.)

Everything is listed under the NOUN or principal word

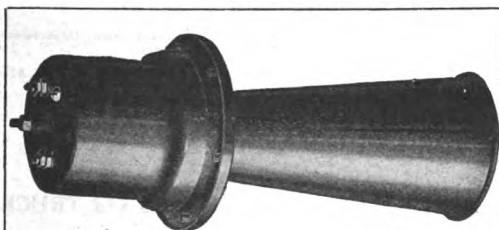
APPROVEDBy
**Underwriters'
Laboratories****BUELL**
EXPLOSION WHISTLE**WARNS EVERY TIME**

The basic correctness of its design makes the Buell absolutely certain in operation. The splendid workmanship going into its staunch construction gives it long life.

A 10 Year Guarantee is back of each Buell Explosion Whistle, and the approval of the Underwriters' Laboratories is further proof of Buell quality.

BUELL MANUFACTURING CO.

Cottage Grove at 30th, Chicago



Schwarze No. 10 Motor Driven Horn and Bracket.

List Price, \$6.00 Each

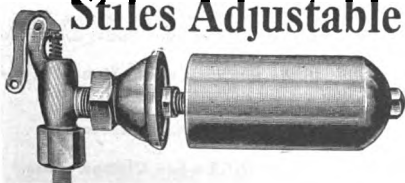
Schwarze Horns

Vibrator and Motor Driven Types. Circuit Breakers. Push Buttons. Electric Bells for the Factory, Department Store, Boats, Mines, Street Cars, Pipe Lines. Telephone Extension Bells and Bussers.

Schwarze Electric Co.

Adrian

Mich.

Stiles Adjustable Explosion Whistle**Ask Your Jobber**

If he can not supply you, order direct from us

Price \$4.00 Complete**Stiles Mfg. Company**
ST. LOUIS, MO.

Please mention The Automobile Trade Directory

HORNS, Mechanical (Continued)

Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)
 Clero—See Fitzgerald Mfg. Co.
 E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone."
 (See page 529.)
 Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Clero."
 (See page 439.)
 General Phone Mfg. Co., Elyria, O.
 (See page 189.)
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Handphone—See E. A. Laboratories.
 Heco—See Heinze Electric Co.
 Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
 Klaxon Co., Newark, N. J.
 (See page 525.)
 Leader—See Talking Horn Co.
 M-L—See Miller-Lovatt Co.
 Miller-Lovatt Co., Weatherly, Pa. "M-L."
 Newtone—See E. A. Laboratories.
 O. B.—See Talking Horn Co.
 Paramount—See Auto Metal Products Co.
 Piel Co.—See Cassidy Co.
 Ryt-O-Way—See Auto Metal Products Co.
 Samson-Lion—See American Electric Co.
 Samson-Tiger—See American Electric Co.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Sparks-Withington Co., Jackson, Mich. "Sparton-Echo," "Spartonet."
 Sparton-Echo—See Sparks-Withington Co.
 Spartonet—See Sparks-Withington Co.
 Standard Auto Horn Co., 207 Broadway, Everett, Mass.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."
 Torpedo—See Talking Horn Co.

HORNS, Mechanical, for Fords*(Hand operated diaphragm horns)*

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 525.)
 Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)
 Clero—See Fitzgerald Mfg. Co.
 Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 439.)
 Klaxon Co., Newark, N. J. (See page 525.)
 Leader—See Talking Horn Co.
 O. B.—See Talking Horn Co.
 Piel Co.—See Cassidy Co.
 Ryt-O-Way—See Auto Metal Products Co.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Sparks-Withington Co., Jackson, Mich.
 Standard Auto Horn Co., 207 Broadway, Everett, Mass.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."
 Torpedo—See Talking Horn Co.

HORNS, MECHANICAL, MOTORCYCLE
—See Horns, Motorcycle Mechanical**HORNS, Motorcycle Mechanical**

A-K—See Angsten-Kox Co.
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (See page 537.)
 Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 525.)
 Bevin Bros. Mfg. Co., East Hampton, Conn.
 E. A. Laboratories, Inc., Brooklyn, N. Y. "Handphone." (See page 529.)
 Handphone—See E. A. Laboratories, Inc.
 Klaxon Co., Newark, N. J. (See page 525.)
 Leader—See Talking Horn Co.
 Mead & Cross Co., 309 Lafayette St., New York, N. Y.
 Paramount—See Auto Metal Products Co.
 Ryt-O-Way—See Auto Metal Products Co.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Talking Horn Co., Central Bldg., Middletown, N. Y. "Leader," "Torpedo."
 Torpedo—See Talking Horn Co.

HORNS, Motorcycle Siren

Sireno Co., 18-20 Rose St., New York, N. Y.

HORNS, Siren*(For Ambulances, Police and Fire Department Apparatus)*

Inter-State Machine Products Co., 54 Allen St., Rochester, N. Y. "Sterling."
 O'Brien Electrophone Co., Hallowell, Me.
 Sireno Co., 18-20 Rose St., New York, N. Y.
 Sterling—See Inter-State Machine Co.

HORSES, TRESTLES and TRUCKS

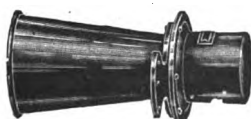
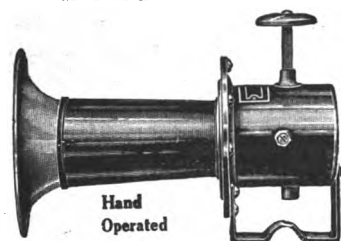
Autohorse—See Bailey-Drake Co.
 Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Safety Equipment Co., West Mentor, O. "Autohorse.")
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Hildreth." (See page 909.)
 Hildreth—See Frasse & Co.
 Johnstown Automobile Co., Johnstown, Pa.
 Safety Equipment Co.—See Bailey-Drake Co.

HOSE BOXES—See Boxes, Standard and Curb**HOSE CLAMPS—See Clamps, Hose****HOSE COUPLINGS—See Clamps, Hose****HOSE, FLEXIBLE METAL—See Tubing, Flexible Metallic; also Hose, Metal Lined****HOSE, GASOLINE—See Hose, Metal Lined**

Everything is listed under the NOUN or principal word

E.A. MOTOR DRIVEN & HAND HORNS

**NEWTONE & HANDPHONE
MOTOR & HAND HORNS**



Especially
Built For
Equip-
ment Pur-
poses.

Under Hood Type

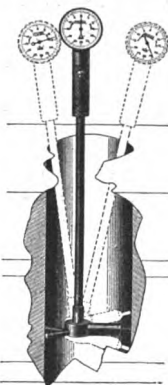
Write for particulars.

E. A. LABORATORIES, Inc.

BROOKLYN, NEW YORK, U. S. A.

Proprietors of
AUTOMOBILE SUPPLY MFG. CO.

Federal Cylinder Gauge With Dial Out in the Open



**Detects Tapered,
Scored or Out-of-
Round Cylinders**

The Federal Cylinder Test Gauge fills the long-felt want for an instrument that will indicate with absolute accuracy and with the greatest possible convenience the size and concentricity of any engine cylinder throughout its entire length.

It is made in two models—Model A, a built-up gauge for testing a variety of diameters, and Model B, with centralizing device for measuring cylinders of a standard size.

Where it is necessary to set the gauge accurately to a standard diameter a "Master" can be furnished when specified.

Write for Cylinder
Gauge Bulletin
No. A3

Please Specify When Requesting
Quotations:

1. What is the diameter or range of cylinders to be measured?
2. Do you wish Model A or B?
3. Do you need Master Gauges? What diameter? How many?

Federal Products Corporation

393 Harris Ave.

Providence, R. I.

Metal

Stampings • Drawings • Spinings

**ALL QUICKLY AND ACCURATELY MADE ON A HIGH
QUALITY BASIS, AT A PRICE THAT IS FAIR TO YOU**

A special feature is a highly competent Designing and Engineering service. Our engineers know what close tolerances mean and our production departments are geared to perform only accurate work. We have frequently suggested that castings be replaced by stamped steel parts at a saving in weight and money and an increase in durability and strength.

Try us and we will interest you

PRESSED STEEL PRODUCTS DIVISION

Benjamin Electric Mfg. Co.

806 W. Washington Boulevard

CHICAGO

247 W. 17th Street
New York

500 Howard Street
San Francisco

Please mention The Automobile Trade Directory

HOSE, Metal Lined*(For use with gasoline pumps)*

American Metal Hose Co., Waterbury, Conn. (See page 291.)
 Atlantic Metal Hose Co., 40 W. 60th St., New York, N. Y.
 Boston Woven Hose & Rubber Co., Cambridge, Mass.
 Breeze Mfg. Co., 355 South St., Newark, N. J.
 Chicago Tubing & Braiding Co., 216-24 N. Clinton St., Chicago, Ill. "Rex."
 Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 531.)
 Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 531.)
 Mulconroy Co., 54th & Jefferson St., Philadelphia, Pa.
 Penflex—See Pennsylvania Flexible Metallic Tubing Co.
 Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa. "Penflex."
 Rex—See Chicago Tubing & Braiding Co.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 289.)
 Triplexd—See Metal Hose and Tubing.
 Whalen Co., John, 25 Purchase St., Boston, Mass.

HOSE, RADIATOR—See Hose, Rubber**HOSE, Radiator, for Fords**

Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Moto-Boston." (See page 601.)
 Beaver—See Mechanical Rubber Co.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 531.)
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Bes-Tos."
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Beaver."
 Mercer Rubber Co., Hamilton Square, N. J.
 Moto-Boston—See Asbestos & Rubber Works of America.
 Soo-Bes-Tos—See Esner Mfg. Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 551.)
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymbo."
 Tymco—See Tyler Mfg. Co.
 United Metal Hose Co., 532 W. 23d St., New York, N. Y.
 United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

HOSE REELS, AUTOMATIC—See Reels, Automatic Hose**HOSE, Rubber***(Radiator hose, including molded radiator connections)*

A-B-C—See American Brake-Lining Co.
 Acme Rubber Mfg. Co., Trenton, N. J.
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 679.)
 Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite." (See page 679.)
 Ankorite—See Anchor Packing Co.
 Barcus—See Electric Hose & Rubber Co.

Boston Belting Co., 24 Linden Park St., Boston, Mass.
 Boston Woven Hose & Rubber Co., Cambridge, Mass. "Sterling."
 Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
 CCC—See Canton Rubber Works.
 Canton Rubber Works, 209 Washington St., Boston, Mass. "CCC."
 Chamberlain Co., B. F., 184 Summer St., Boston, Mass.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. "Norka," "Fidelity," "Losant," "Sandow," "Puritan." (See page 531.)
 Cleveland—See Mechanical Rubber Co.
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Conqueror—See Voorhees Rubber Mfg. Co.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalis."
 Cyrus—See Electric Hose & Rubber Co.
 Dugas-Hundley Corp., 29 W. 54th St., New York, N. Y. "Reliance."
 Dural Rubber Corp., Maple Ave., Flemington, N. J.
 Duro—See Electric Hose & Rubber Co.
 Electric Hose & Rubber Co., 12th & Duro Sts., Wilmington, Del. "Duro," "Laconic," "Cyrus," "Velvet," "Supero," "Barcus."
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Everware Rubber Co., 241 Oregon St., Milwaukee, Wis.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Fidelity—See Cincinnati Rubber Mfg. Co.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 Goodrich Co., B. F., S. Main St., Akron, O.
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 119.)
 Home Tire Co., Trenton, N. J.
 J. E.—See Eno Rubber Co.
 Laconic—See Electric Hose & Rubber Co.
 Losant—See Cincinnati Rubber Mfg. Co.
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco."
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O. "Cleveland."
 Mercer Rubber Co., Hamilton Square, N. J.
 Mikesell Brothers Company, 156 La Salle St., Chicago, Ill. (See page 315.)
 Milford Rubber Works, Milford, Ill.
 National India Rubber Co., Bristol, R. I.
 New York Belting & Packing Co., 21 Chambers St., New York, N. Y.
 Norka—See Cincinnati Rubber Mfg. Co.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Puritan—See Cincinnati Rubber Mfg. Co.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Reliance—See Dugas-Hundley Corp.
 Sandow—See Cincinnati Rubber Mfg. Co.
 Sterling—See Boston Woven Hose & Rubber Co.
 Supero—See Electric Hose & Rubber Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 551.)

Everything is listed under the NOUN or principal word

FLEXIBLE METAL HOSE & TUBING

GALVANIZED STEEL

SQUARE LOCKED

For Carburetors, Heaters, Automobile
Wiring

INTERLOCKED

For Exhaust, Carburetors

The constantly increasing number of cars and trucks of national reputation which use tubing of our manufacture as standard equipment is our claim to your attention. Our business is built on quality and service.

THE A. DEWES COMPANY
199 LAFAYETTE ST., NEW YORK

The Cincinnati Rubber Mfg. Co.

Cincinnati, Ohio

LOSANT — Air Hose — Extra heavy, for Public Garage use. Does not require wire wrapping.

FIDELITY Air Hose—for Private Garage use.

NORKA Radiator Hose.

PURITAN—Gasoline Hose.

ARNO—Brake Lining.

WAMPUS — Graphited Fibre Sheet.

SANDOW—Fibre Sheet.

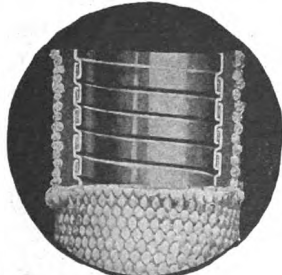
ROYAL—Red and Black Asbestos Sheet.

OLD CROW—Valve Stem Packing.

ROYAL Generator Tubing.

Special Rubber Parts moulded to order.

Specify TRIPLEXD—Be Sure of Service



There is no hose exactly like TRIPLEXD. TRIPLEXD construction (the way the metal, rubber and fabric are built into a permanent unit) explains TRIPLEXD performance.

Triplexd Gasoline Hose is the strongest, most flexible and durable gasoline, oil and paint spray hose. It will give you better service than any other hose at any price.

List Prices

(Substantial discounts quoted on request)

Size (Inside diameter)	Hose per ft.	Coupling
$\frac{1}{2}$ inch	\$0.70	\$2.00
$\frac{3}{4}$ inch	1.00	2.40
1 inch	1.20	3.00
1 $\frac{1}{4}$ inch	1.80	3.60

Prices of larger sizes on application

We make and carry in stock couplings for all standard gasoline pumps. Briggs Standard Pipe Thread furnished unless otherwise specified.

Guarantee

Every length of TRIPLEXD Pump Hose bears a serial number and is specifically guaranteed for one year's service.* We stand back of every length of TRIPLEXD in the world.

Specify TRIPLEXD for Replacement—It means fewer replacements

TRIPLEXD

METAL HOSE & TUBING CO.
INCORPORATED
230 Tillary St.
BROOKLYN, N. Y.

*The average service life of TRIPLEXD is over two years.

Lengths of TRIPLEXD are sold on the job after four years' service.

Please mention The Automobile Trade Directory

HOSE, Rubber (Continued)

United States Rubber Co., 1790 Broadway,
New York, N. Y.
United & Globe Rubber Co., Prospect &
Frasier Sts., Trenton, N. J.
Usco—See Mechanical Rubber Co.
Valvet—See Electric Hose & Rubber Co.
Vitalio—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-24 Bostwick
Ave., Jersey City, N. J. "Conqueror."
Vulco—See Gates Rubber Co.
Whitehead Bros. Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Dale St.,
Trenton, N. J.

**HOT ROLLED STRIP STEEL—See Steel,
Hot Rolled Strip****HOUSING BRACES FOR FORDS—See
Braces, Drive Shaft Housing****HOUSING PULLERS FOR FORDS—See
Pullers, Axle Housing****HOUSINGS, Pressed Steel Axle***(See also Stampings, Steel)*

Bossert Corp., Utica, N. Y. (See page 887.)
Crosby Co., Buffalo, N. Y. (See page 893.)
Detroit Pressed Steel Co., Detroit, Mich.
(See page 1053.)
Hydraulic Pressed Steel Co. of the Hy-
draulic Steel Co., Cleveland, O.
(See page 421.)
La France Truck Co., Ward, Grand Central
Ave. & 11th St., Elmira Heights, N. Y.
Parish Mfg. Co., Reading, Pa.
(See page 410.)
Parish & Bingham Corp., Cleveland, O.
Smith Corp., A. O., Milwaukee, Wis.
(See page 903.)
Worcester Pressed Steel Co., Worcester,
Mass. (See page 901.)

**HUB BOLTS, AIRCRAFT—See Bolts, Air-
craft Propeller Hub****HUB BORERS—See Machines, Aircraft Pro-
peller Hub Boring****HUB BORING MACHINES—See Machines,
Aircraft Propeller Hub Boring****HUB BRAKES—See Brakes, Expanding and
Contracting****HUB CAP WRENCHES FOR FORDS—See
Wrenches, Hub Cap****HUB CAPS—See Caps, Hub****HUB DRUMS—See Winches and Blocks,
Car Extracting****HUB FLANGES, AIRCRAFT PROPELLER
—See Hubs, Aircraft Propeller****HUBS, Airplane**

Eclipse Machine Co., Elmira, N. Y.
(See page 163.)

HUBS, Demountable, for Fords

(For Demountable Wheels—See Wheels, Demountable)
Anglers, 500 N. Vermillion St., Streater, Ill.
Autoware Corp., 441 State St., Detroit, Mich.
"Dann."
Bronxco Wheel Co., 535-57 Jackson Ave., New
York, N. Y.
Dann—See Autoware Corp.
Hill-Smith Metal Goods Co., 83 Brookline
Ave., Boston, Mass. "Minute."
(See page 533.)
Minute—See Hill-Smith Metal Goods Co.
Peerless Products Co., Peerless Bldg., To-
ledo, O.
Rapid Change Wheel Co., 50 Division St., S.
E. Grand Rapids, Mich.
Simplicity Mfg. Co., 1981 E. 97th St., Cleve-
land, O.
Stone Mfg. Co., 1502 Michigan Ave., Chi-
cago, Ill. (See page 797.)
Telford—See White Machine Works.
White Machine Works, A. E., Eau Claire, Wis.
"Telford."

HUBS, Motorcycle

B-N—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., 532-49 Peyton
St., Geneva, Ill. "B-N." (See page 627.)
Ramsdell Specialty Co., 667 W. Boylston St.,
Worcester, Mass.
Standard Parts Co., Cleveland, O.
(See page 283.)

HUBS, Wheel*(For Hub Flanges—See Flanges, Pressed Steel)*

American Pulley Co., 4200 Wissahickon Ave.,
Philadelphia, Pa.
Bossert Corp., Utica, N. Y. (See page 887.)
Crosby Co., Buffalo, N. Y. (See page 893.)
Kelsey Wheel Co., Detroit, Mich.
(See page 1061.)
Maryland Metal Products Co., Hagerstown,
Md.
Salisbury Axle Co., Jamestown, N. Y.
(See page 1078.)
Standard Gear Co., 5930 Commonwealth Ave.,
Detroit, Mich.

HUBS, Wheel for Fords

Allith-Prouty Co., Danville, Ill.
(See page 535.)

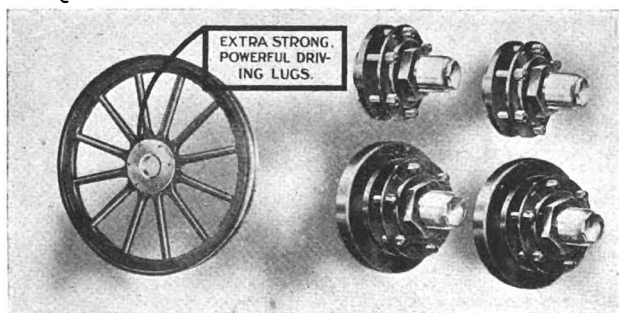
**HUBS and HUB FLANGES, Aircraft
Propeller**

Dunkirk Axle Corp., Dunkirk, N. Y.
(See page 245.)

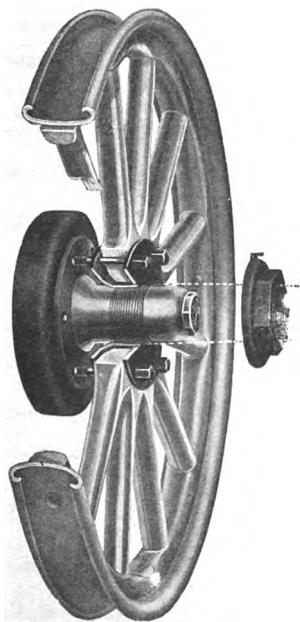
HULLS, Flying Boat

Aeromarine Plane & Motor Corp., Keyport,
N. J.
Alexander Aircraft Corp., Alexander, Va.
Boeing Airplane Co. (Georgetown), Seattle,
Wash.
Curtiss Aeroplane & Motor Corp., 65 Churchill
St., Buffalo, N. Y.

Everything is listed under the NOUN or principal word



The **H-S** or MINUTE Demountable Wheel Equipment



The only cheap, quick, safe and time tested tire changing device for the Ford car.

The many thousands in use are creating new business in good times and bad.

*Profits are liberal.
Display stand free.*

SEND FOR BOOKLET
**HILL-SMITH METAL
GOODS COMPANY**
82 Brookline Avenue
BOSTON, MASSACHUSETTS

HULLS, Flying Boat (Continued)

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.
 Curtiss Engineering Corp., Garden City, N. Y.
 Gallaudet Aircraft Corp., East Greenwich, R. I.
 L. W. F. Engineering Co., Third Ave. & Eighth St., College Point, N. Y.
 Lawley Boat Co., Boston, Mass.
 Martin Co., Glenn L., 16300 St. Clair Ave., Cleveland, O.
 Palmer-Simpson Corp., Saranac, N. Y.
 Reliance Motor Boat Co., 397th St. & Harlem River, W., New York, N. Y.
 Schneider Bros. Instrument Co., 350-52 Palisade Ave., Jersey City, N. J.
 Standard Aero Corp. of N. Y., Elizabeth, N. J.
 Thomas-Morse Aircraft Corp., Ithaca, N. Y.
 Wright-Martin Aircraft Corp., New Brunswick, N. J.

HUMIDIFIERS—See Moisteners, Air

HYDRAULIC BRAKES—See Brakes, Hydraulic

HYDRAULIC TESTING DYNAMOMETERS—See Dynamometers, Hydraulic Testing

HYDRO-AIRPLANES—See Airplanes, Section I

HYDROMETER BOXES—See Boxes, Wrench and Small Tool

HYDROMETERS, Testing

(For testing Battery Electrolyte, Gasoline, etc.)

A. E. M.—See Moeller, A. E.
 American Thermo-Ware Co., 16 Warren St., New York, N. Y. "Autocrat."
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
 Asch and Co., Inc., 16-34 W. 61st St., New York, N. Y. (Eastern Distributors for Workrite Hydrometers.) (See page 243.)
 Autocrat—See American Thermo-Ware Co.
 Battery Equipment & Supply Co., 1468 Michigan Ave., Chicago, Ill. (See page 201.)
 Beck & Co., Oscar, 230 Mauger St., Brooklyn, N. Y.
 Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. "Master," "Radiometer." (See page 273.)
 Breaknot—See Edelmann & Co.
 Dependable—See Universal Products Co.
 Doorman Accessory Co., 2905 Marshall Ave., Cincinnati, O.
 Edelmann & Co., E., 2138 N. Crawford Ave., Chicago, Ill. "Breaknot," "Testometer."
 Freesometer—See Taylor Instrument Cos.
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co., (North Philadelphia), Philadelphia, Pa. "Genco."
 Griebel Instrument Co., River St., Carbondale, Pa.
 Hydrokit—See Steiner Mfg. Co.
 Kant Stick—See Scranton Glass Instrument Co.
 Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.
 Master—See Beckley-Ralston Co.
 Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M." (See page 535.)
 Optical Specialties Co., 112 Church St., New York, N. Y. "Test Right."
 Perfection Hydrometer Co., 742 Turner St., Los Angeles, Cal. (See page 563.)

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Radiometer—See Beckley-Ralston Co.

Reliable—See Scranton Glass Instrument Co.
 Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Scranton Glass Instrument Co., 322 N. Washington Ave., Scranton, Pa. "Simplex," "Reliable," "Kant Stick."

Simplex—See Scranton Glass Instrument Co.
 Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Steiner Mfg. Co., 590-99 Jackson Ave., Long Island City, N. Y. "Hydrokit," "Wintometer."

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Freesometer."

Test Right—See Optical Specialties Co.

Testometer—See Edelmann & Co.

Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Dependable."

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

Weiss & Son, Albert A., 572 Gates Ave., Brooklyn, N. Y.

Wintometer—See Steiner Mfg. Co.

Workrite Mfg. Co., 5602 Euclid Ave., Cleveland, O.

HYDROSTATIC DYNAMOMETERS—See Dynamometers, Hydrostatic

IGNITION CABLE—See Wire, Insulated

IGNITION CUT-OUTS FOR FORDS—See Cut-Outs, Automatic Ignition

IGNITION DYNAMOS—See Magnetos, Ignition

IGNITION INTERRUPTERS—See Interrupters, Automatic Airplane Ignition

IGNITION SWITCH CONTROLS—See Controls, Ignition Switch

IGNITION SWITCHES—See Switches, Ignition

IGNITION SYSTEMS, SINGLE SPARK—See Systems, Battery Ignition

IGNITION TIMERS—See Timers, Ignition

IGNITION WINDINGS—See Windings, Starter and Ignition

IGNITION WIRE—See Wire, Insulated

IGNITION WIRING FOR FORDS—See Sets, Wiring

IMITATION LEATHER—See Leather, Artificial

IMPULSE STARTERS—See Starters, Impulse

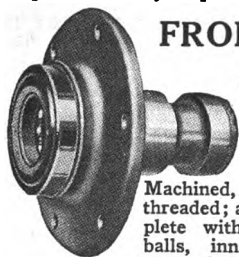
INCANDESCENT LAMPS—See Lamps, Miniature Incandescent

INCIDENCE INDICATORS, AIRPLANE—See Indicators, Airplane Incidence

Everything is listed under the NOUN or principal word

HUBS for FORDS FRONT and REAR

Our own high-grade MALLEABLE IRON is used in the making of these HUBS, and this basic quality, in connection with the high class workmanship put on the casting, enables us to offer a HUB, either for the Front or for the Rear, that is superior in every respect.



FRONT HUB

(Less Flange and Hub Bolts)

Machined, drilled and threaded; assembled complete with Hoover "A" balls, inner and outer races, felt ring and dust

collar. Drilled for application of speedometer gear.

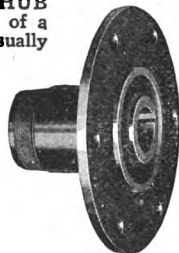
Packed 36 in a case. Method of packing eliminates any chance for damage due to rough handling. Approximate shipping weight—185 lbs. per case.

REAR HUB

(Less Flange and Hub Bolts)

Completely machined, taper bored, La Pointe broached keyway. Threaded for hub cap and ready to install. Workmanship put on this HUB will be found to be of a higher order than usually expected.

Packed 36 in a case. Method of packing eliminates any chance for damage due to rough handling. Approximate shipping weight—185 pounds per case.



ALLITH-PROUTY CO., DANVILLE, ILLINOIS

Owning and Operating Danville Malleable Iron Co.

ELEC-TRO-LITE

The Ideal Trouble Light for Automobiles and Motorcycles

It sticks solidly and securely to any piece of iron or steel part on the car regardless of enamel, rust or dirt.

ELEC-TRO-LITE may be used as an emergency Head or Tail light simply by changing bulbs, and for night work on tires it comes in extremely handy as no one is required to hold it in position.

It is true as one satisfied user happily phrased it, "Once you have used an ELEC-TRO-LITE it will actually start sticking to you."

Jobbers and Dealers stock this quick seller immediately; its appealing features sell on sight.

THE ELECTRIC ARTS CO.,
14 E. Read St. Baltimore, Md.



(½ Actual Size)

Price, complete with Plug and Cord, \$3.50

A. E. M. Freezometer and Battery Test-O-Meter

Below is brief description of two very necessary motor car accessories needed by every car owner.

Write us today and we will send you our terms to the trade.

FREEZOMETER

Radiators will freeze. Every year thousands are destroyed from this cause.

The "Freezometer" is the only article of its kind. It is an assurance against frozen radiators or cracked cylinders.

Another accessory that every car owner should have.

Retails for \$1.50.

BATTERY TEST-O-METER

is used for determining the charge, mixing the acids, and diagnosing the troubles of Storage Batteries, Motor Trucks, etc.

This instrument also has an exclusive patented (non-stick) feature, which makes it impossible for the hydrometer to stick to the side of the barrel.

Retails for \$1.50.

Write us today for terms to the trade

A. E. MOELLER
261 Sumpter St. BROOKLYN, N. Y.

Please mention The Automobile Trade Directory

INCLINOMETERS, Airplane

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.
 Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Tycoo."
 Tycoo—See Taylor Instrument Cos.

INDICATING BAROMETERS—See Barometers, Altitude Indicating

INDICATING METERS—See Meters, Water Temperature Indicating; also Barometers, Altitude Indicating; also Meters, Truck Load Indicating; also Meters, Oil Temperature Indicating; also Meters, Distance Recording; also Speedometers

INDICATING SIGNALS—See Signals, Direction Indicating or Traffic**INDICATORS, Aircraft Speed**

Foxboro Co., Neponset Ave., Foxboro, Mass.
 Jones-Metrola, 29 W. 35th St., New York, N. Y.
 Pioneer Instrument Co., 136 Havemeyer St., Brooklyn, N. Y.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, Airplane Banking

Pioneer Instrument Co., 136 Havemeyer St., Brooklyn, N. Y.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, Airplane Drift

Pioneer Instrument Co., 136 Havemeyer St., Brooklyn, N. Y.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, Airplane Incidence

Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

INDICATORS, AUTOMOBILE SPEED—See Speedometers**INDICATORS, CIRCULATION—See Gages, Water; Also Sight Feeds****INDICATORS, COMPRESSION—See Gages, Cylinder Compression****INDICATORS, DISTANCE OR MILEAGE—See Meters, Distance****INDICATORS, FUEL LEVEL—See Gages, Gasoline Tank****INDICATORS, Gasoline Engine**

Dayton-Wright Division of The General Motors Corp., Dayton, O. "Midgley."
 Midgley—See Dayton-Wright Division.

INDICATORS, GRADE—See Meters, Grade**INDICATORS, OIL CIRCULATION—See Sight Feeds, Independent****INDICATORS, SPARK—See Gaps, Spark****INDICATORS, SPEED—See Indicators, Aircraft Speed; also Speedometers****INDICATORS, STORAGE BATTERY TEMPERATURE—See Thermostats, Storage Battery****INDICATORS, TANK—See Gages, Gasoline Tank****INDICATORS, TIRE PRESSURE — See Gages, Tire Pressure****INDICATORS, Tractor Engine Speed**
Waltham Watch Co., Waltham, Mass.**INDICATORS, WATER CIRCULATION—See Gages, Water Circulating****INFLATORS, TIRE—See Pumps; also Tanks****INJECTORS, Boiler Feeding**

American Injector Co., 1469 14th Ave., Detroit, Mich. "U. S."
 U. S.—See American Injector Co.

INJECTORS, GREASE—See Guns, Grease**INJECTORS, WATER—See Moisteners, Air****INNER TIRE SHOES—See Shoes, Inner Tire****INNER TUBE BAGS—See Covers, Spare Tire****INNER TUBE MANDRELS—See Mandrels, Inner Tube****INNER TUBE TESTING TANKS—See Tanks, Inner Tube Testing****INNER TUBES—See Tubes, Inner****IRON, Pig**

Charcoal Iron Company of America, Detroit, Mich. "Cicoa," "Pine Lake," "Hinkie," "Michigan," "Champion."
 (See page opposite last page.)
 Champion—See Charcoal Iron Co. of America.
 Cicoa—See Charcoal Iron Co. of America.
 Hinkie—See Charcoal Iron Co. of America.
 Michigan—See Charcoal Iron Co. of America.
 Pine Lake—See Charcoal Iron Co. of America.

INSERTS, CLUTCH—See Corks, Brake and Clutch**INSERTS, SPRING LEAF—See Strips, Spring Leaf****INSPECTING MACHINES, TIRE—See Machines, Tire Inspecting****INSPECTION LAMPS—See Lamps, Electric Hand****INSTRUMENT BOARDS—See Cows**

Everything is listed under the NOUN or principal word

ONE BY ONE EVERY BIG BUYER GETS THE A-K LINE



A-K TIMERS

A-K AUTOMOBILE ACCESSORIES are a good example of *quality* recognized. Shapleigh, Simmons, Bigelow & Dowse—yes, all the great jobbing institutions—not only carry *but prefer* A-K products.

A-K HORNS are mechanically perfect. Geared to six revolutions instead of two. Speak at slightest touch. Beautifully modulated, yet farthest-reaching and long-enduring, one and all alike in uniformity of perfection.

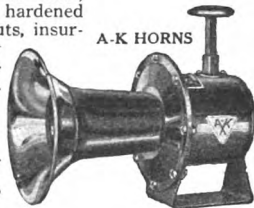
A-K TIMERS have a die-cast hub of *brass*; well seasoned genuine bone-fibre; contact plates machine-ground and polished to mirror-finish; roller-assembly perfectly balanced; hardened roller on hardened pin; eight brass nuts, insuring perfect contact; double-tested for short circuit. Always uniformly perfect. Their superiority is very apparent.

Get acquainted with A-K products. *They satisfy.* Leading jobbers carry the A-K line. If yours can't supply you, write us.

ANGSTEN-KOX COMPANY
221-223 W. Randolph St., Chicago
Plants at Chicago and Michigan City, Ind.



A-K HORNS



A-K ACCESSORIES ARE *BEST*



LADISH QUALITY FORGINGS

We are specialists in the production of quality drop forgings for all branches of the automotive industries and possess unique facilities for rapid production in all quantities. Send us your blueprints and let us quote.

LADISH DROP FORGE COMPANY
CUDAHY, WISCONSIN

Please mention The Automobile Trade Directory

INSTRUMENTS, Electrical Circuit Testing

(For Ammeters and Voltmeters—See Ammeters;
For Battery Gages—See Gages, Battery.)

- Ambu—See American Bureau of Engineering.
American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 659.)
Anderson—See West Mfg. Co.
Bestall Electric Co., Lytton Bldg., Chicago, Ill. "Testzall."
Cliff Instrument Co., Lee, 1748 W. 48th St., Los Angeles, Calif.
Cowie Electric Co., E. S., 1818 McGee St., Kansas City, Mo.
Defectometer—See Niehoff & Co.
Dorbeck, R. V., Brighton Ave., Long Branch, N. J.
Durham Co., P. J., 244 W. 49th St., New York, N. Y.
Edgerton & Co., R. G., Suffolk, Va.
Electric Power Maintenance Co., 1101-09 Monroe St., Toledo, O. "Testaphone."
Generometer—See Niehoff & Co.
Harlan Ignition Instrument & Mfg. Co., Watsonville, Cal.
Hugo Mfg. Co., J., 318 George St., New Haven, Conn. "Testalite."
Igni-Test—See Testall Electric Mfg. Co.
Mag Fixer—See Stahl Rectifier Co.
Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.
Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. "Defectometer," "Generometer," "Taskart." (See page 897.)
Onan, David W., 1323 Penn Ave., N. Minneapolis, Minn. (See page 539.)
Peco—See Phillips & Co.
Phillips & Co., H. B., Union City, Ind. "Peco."
Price Storage Battery Co., W. F., 1618 N. Broad St., Philadelphia, Pa.
Quality Electric Products Co., 907 E. 15th St., Kansas City, Mo. (See page 539.)
Shontz Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. (Metropolitan Distributors for "Ambu" Instruments.) (See page 177.)
Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill. "Mag Fixer."
Taskart—See Niehoff & Co.
Testalite—See Hugo Mfg. Co.
Testall Electric Mfg. Co., 610 Market St., San Antonio, Tex. "Igni-Test."
Testaphone—See Electric Power Maintenance Co.
Testzall—See Bestall Electric Co.
West Mfg. Co., 807 Keeney St., Abilene, Kans. "Anderson."

INSTRUMENTS, Engine Testing

(For locating knocks in engines)

- American Electric Co., 3401 S. State St., Chicago, Ill. "Sonoscope."
Chapman—See S. C. M. Corp.
Fairbanks Co., New York, N. Y. (Sole distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. "Hammett.") (See pages 619 to 622.)
Hammett—See Fairbanks Co.
Hempy-Cooper Mfg. Co.—See Fairbanks Co.
Hopewell Bros., Watertown, Mass. "Vibrator." (See page 641.)

- Pilling & Son Co., G. P., Arch & 23d St., Philadelphia, Pa. "Phonendoscope."
Phonendoscope—See Pilling & Son Co.
S. C. M. Corp., 105 E. 19th St., New York, N. Y. (Sole Distributors for Chapman Mfg. Co., St. Louis, Mo.)
Sonoscope—See American Electric Co.
Vibrator—See Hopewell Bros.

INSTRUMENTS, FELT TESTING—See Instruments, Rubber and Felt Testing

INSTRUMENTS, Gear Testing

- Gleason Works, 1000 University Ave., Rochester, N. Y.

INSTRUMENTS, Metal Testing

(For Metal Testing Machines—See Machines, Metal Testing)

- Brinell—See Holz, Herman A.
Brinell—See Pittsburgh Instrument & Machine Co.
Gries Bros., 450-52 E. 148th St., New York, N. Y. "Standard."
Holz, Herman A., 17 Madison Ave., New York, N. Y. "Brinell."
Pittsburgh Instrument & Machine Co., 40 Water St., Pittsburgh, Pa. "Brinell."
Standard—See Gries Bros.

INSTRUMENTS, MOTOR TESTING—See Instruments, Engine Testing

INSTRUMENTS, Rubber and Felt Testing

- Scleroscope—See Shore Instrument & Mfg. Co.
Shore Instrument & Mfg. Co., 9025-29 Van Wyck Ave., Jamaica, N. Y. "Scleroscope."

INSTRUMENTS, Storage Battery Testing

(See also Gages, Battery; also Instruments, Electric Circuit Testing; also Hydrometers)

- American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. (See page 659.)
Cowie Electric Co., E. S., 1818 McGee St., Kansas City, Mo.
Hyrate—See Service Station Supply Co.
Quality Electric Products Co., 907 E. 15th St., Kansas City, Mo. (See page 539.)
Service Station Supply Co., 124 E. Larned St., Detroit, Mich. "Hyrate."
Shontz Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. "Shuro." (See page 177.)
Shuro—See Shontz Co.
Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O.
Thompson Battery Tester Co., Greensburg, Pa.
Weindenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.
Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 81.)

INSTRUMENTS, TRUCK LOAD INDICATING—See Meters, Truck Load Indicating

Everything is listed under the NOUN or principal word



Electrical Testing Devices for Garages and Ford Service Stations

The Ford Motor Car Company have requested all its service stations to install electrical testing devices.

In line with this request it will pay garage and repair men to investigate the Onan Electrical Testing Device. Much cheaper than other similar devices, it has proved itself in actual service to be absolutely dependable and accurate. Prices from \$50.00 to \$200.00. Send for illustrated literature.

DAVID W. ONAN, Penn and 14th Aves., N. Minneapolis, Minn.

"ELECTRIC SERVICE STATION ENGINEERS"

The Quality Growler

It tests Generator armatures or Starting armatures.

It detects troubles not found by the ordinary type of growler.

This automatic growler gives tests under operating conditions, short circuits and grounds in coils, leaks due to moisture and charred insulation, commutator trouble, loose leads, grounds and short circuited bars, reversed coils; transposed leads and other trouble quickly and accurately located. Comparative meter reading gives positive indication of all troubles that armatures and field coils are subject to.

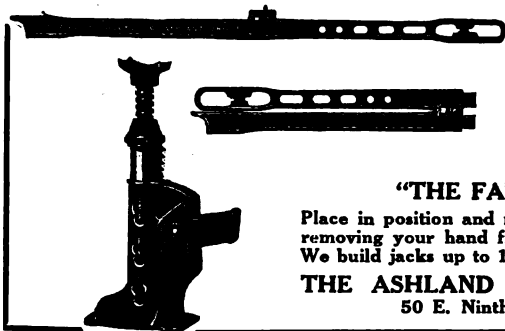
FEATURES

Automatic Switch—Shunt Bars—Series Parallel Switch—Testing Bug

All possible armature troubles charted and instructions given for testing for each, with each device.

The Cadmium Tester—Another Quality trouble chaser. The Cadmium Tester is to your battery what the X-Ray is to the human body.

Quality Electric Products Co.
907 East 15th Street, Kansas City, Mo.



No. 25 APC Handle Controlled Combination Ratchet

Positive in action, short stroke, easy lift, extension handle.

"THE FAT MAN'S JACK"

Place in position and raise or lower the load without removing your hand from the handle. We build jacks up to 10-ton capacity.

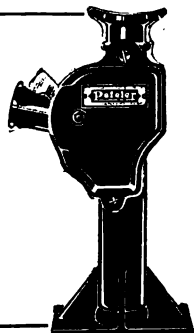
THE ASHLAND PRODUCTS COMPANY
50 E. Ninth St., Ashland, Ohio



COE-STAPLEY Auto Pumps & Jacks

A complete line at the right price with selling features that mean easy sales and satisfied customers.

Coe-Stapley Manufacturing Corporation
West Haven, Conn.



Please mention The Automobile Trade Directory

INSULATED STAPLES—See Staples, Insulated

INSULATED WIRE—See Wire, Insulated

INSULATING COMPOSITION—See Composition, Insulating

INSULATING TAPE—See Tape, Insulating and Tire

INSURANCE, Automotive

(Covering insurance companies and insurance brokers who advertise in this publication)

Hollister, L. T., 92 William St., New York, N. Y. (See page 369.)

Home Insurance Co., New York, N. Y. (See page 377.)

INTAKE MANIFOLDS—See Manifolds, Intake and Exhaust

INTAKE STRAINERS—See Cleaners, Air

INTAKE WASHERS—See Cleaners, Air

INTENSIFIERS, SPARK—See Gaps, Spark

INTERNAL BRAKE SHOES FOR FORDS—See Shoes, Brake

INTERNAL GRINDERS—See Grinders, Internal

INTERRUPTERS, Automatic Air-plane Ignition

(Instrument to automatically interrupt the engine ignition, thereby stopping the engine in the event of the propeller breaking)

Duplex Engine-Governor Co., 58 Flatbush Ave., Ext., Brooklyn, N. Y. (See page 457.)

IRON CASTINGS—See Castings

IRON CEMENT—See Cement, Cast Iron

IRON LINED BRASS TUBING—See Tubing, Iron Lined

IRON RIVETS—See Rivets, Iron

IRON WASHERS—See Washers, Iron

IRONS, Body or Top

(For Top Holders—See Holders, Top; See also Forgings, Drop)

Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.

Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 247.)

Bonney Forge & Tool Works, Allentown, Pa.
Brewer Tichener Corp., Cortland, N. Y. (See page 573.)

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Indiana Mould & Machine Works, 1015 S. Council St., Muncie, Ind.

Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.

Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 309.)

Motor Products Corp., 11803 Mack Ave., Detroit, Mich. (See page 843.)

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

IRONS, Copper Soldering

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 843.)

IRONS, Electric Soldering

Ambu—See American Bureau of Engineering.
American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill.
"Ambu." (See page 659.)

Baco Electric Co., Bode, Ia. "Soderwand."

Belfry & Craighead, Tribune Bldg., Chicago, Ill. "Ever-Hot."

Clemens Electrical Corp., 725 Main St., Buffalo, N. Y. "J. C."

Dover Mfg. Co., Dover, O.

Ever-Hot—See Belfry & Craighead.

General Electric Co., Schenectady, N. Y. (See page 779.)

J. C.—See Clemens Electrical Corp.

Shonts Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. (See page 177.)

Soderwand—See Baco Electric Co.

Vulcan Electric Heating Co., 107 W. 13th St., New York, N. Y.

IRONS, Slat

(For Saw Sockets—See Sockets, Saw)

Amesbury Brass & Foundry Co., Amesbury, Mass.

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

IRONS, SOLDERING—See Irons, Electric Soldering

IRONS, TIRE—See Tools, Tire

IRONS, TOP—See Irons, Body or Top

JACKS, Lifting

(For Wheel and Tire and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.

Acme—See Spencer's Sons.

Ajax Auto Parts Co.—See Brandenburg Bros. & Eccleston.

Arlrite—See National Jack & Mfg. Co.

Asteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Aro."

American Chain Co., Bridgeport, Conn. "Weed." (See page 543.)

Aro—See Asteel Mfg. Co.

Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 539.)

Atlas Mfg. Co., W. Central Ave., Orlando, Fla.

Auto Specialties Mfg. Co., St. Joseph, Mich. "Drednaunt." (See page 247.)

Badger—See Walker Mfg. Co.

Barrett—See Duff Mfg. Co.

Barth Mfg. Co., Milwaukee, Wis.

Beacon Bronze Co., Beacon, N. Y. "Super." (See page 563.)

Benedict—See National Machine Co.

Black Jack Co., Funk, O.

Brandenburg Bros. & Eccleston, 1113 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Ajax Auto Parts Co., Racine, Wis. "Rapco.")

Everything is listed under the NOUN or principal word

RELIABLE JACKS



Reliable Jacks are made to meet the demands for dependability and infallible service, and yet sell at a reasonable price.

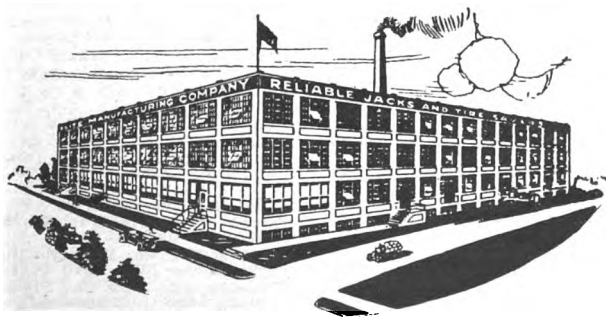
Every Reliable Jack sold means a satisfied, confident customer who will come back for future needs. Every jack is guaranteed.



Write us now as to your requirements.

ELITE MANUFACTURING CO.

Ashland, Ohio



Our Large Plant Devoted Exclusively to the Manufacture of Reliable Jacks

Please mention The Automobile Trade Directory

JACKS, Lifting (Continued)

- Buckeye Jack Mfg. Co., Alliance, O.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for F. W. Mann Co., Milford, Mass. "Kimball.")
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Cleveland Mfg. Co., 2784 Tennyson Rd., Cleveland, O.
 Coe-Stapley Mfg. Corp., West Haven, Conn. "Peteler." (See page 539.)
 Coryell Jack Co., Pontiac, Mich.
 De Luxe—See National-Standard Co.
 Diamond Auto Parts Co., 56 Greenpoint Ave., Brooklyn, N. Y. (See page 545.)
 Drednaut—See Auto Specialties Mfg. Co.
 Duff Mfg. Co., Pittsburgh, Pa. "Barrett." (See page opposite Inside Back Cover.)
 E & S—See J B S Mfg. Co.
 Elite Mfg. Co., Ashland O. "Reliable." (See page 541.)
 G. & W. Electric Specialty Co., 7440-52 S. Chicago Ave., Chicago, Ill.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Gibraltar Jack Co., 1902 Broadway, New York, N. Y.
 H-C—See Lane Bros. Co.
 Handee—See Racine Handy Mfg. Co.
 Hart-Bell Co., 1926 Broadway, New York, N. Y.
 Hartford, Edward V., 35 Warren St., New York, N. Y. "Red Rack." (See page 547.)
 Hi-Lo—See Rowe Calk & Chain Co.
 Indestructo—See Jiffy Jack Co.
 Iron City Products Co., Dept. 21, 7501 Thomas Blvd., Pittsburgh, Pa. "Rees." (See page 547.)
 J B S Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y. "E & S."
 Jaxall—See Sunderman Corp.
 Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."
 Joyce-Cridland Co., 333 S. Linden Ave., Dayton, O. "XX Century."
 Jump Jack—See Walker Mfg. Co.
 Kasoo—See National Standard Co.
 Kimball—See Cassidy Co.
 Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y. "H-C."
 Leader—See National Standard Co.
 Little Giant—See Pratt Mfg. Co.
 Little Giant—See Spencer's Sons.
 Manco—See Mann Corp.
 Mann Co.—See Cassidy Co.
 Mann Corp., Kankakee, Ill. "Manco."
 Martin & Co., Edward, 33 S. Clinton St., Chicago, Ill. "Perfection Airrite."
 Mobilift—See National Jack Co.
 National Jack Co., Gest & Evans Sts., Cincinnati, O. "Mobilift."
 National Jack & Mfg. Co., 120-34 S. Clinton St., Chicago, Ill. "Airrite," "Sturdy."
 National Machine Co., Brattleboro, Vt. "Benedict."
 National Standard Co., Eighth & Howard Sts., Niles, Mich. "Kasoo," "Standard," "Leader."
 Norlund Novelty Co., Williamsport, Pa.
 Oliver Mfg. Co., 326 S. Desplaines St., Chicago, Ill. "Peerless."
 Peerless—See Oliver Mfg. Co.
 Perfect—See Walker Mfg. Co.
 Perfection Airrite—See Martin & Co.
 Peteler—See Coe-Stapley Mfg. Co.
 Pratt Mfg. Co., Wm. M., 88 W. Lake St., Chicago, Ill. "Little Giant," "Pup."
 Pup—See Pratt Mfg. Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Rapco—See Brandenburg Bros. & Eccleston.
 Red Rack—See Hartford, Edward V.
 Red Wonder—See Sidel-Rattner Mfg. Co.
 Rees—See Iron City Products Co.
 Reliable—See Elite Mfg. Co.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Rowe Calk & Chain Co., Plantsville, Conn. "Hi-Lo."
 Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder." (See page 759.)
 Simplex—See Templeton, Kenly & Co.
 Spencer's Sons, I. S., Fair St., Guilford, Conn. "Acme," "Little Giant."
 Standard—See National Standard Co.
 Sterling—See Republic Auto Parts Co.
 Sturdy—See National Jack & Mfg. Co.
 Sunderman Corp., Newburgh, N. Y. "Jaxall." (See page 393.)
 Super—See Beacon Bronze Co.
 Templeton, Kenly & Co., 1020 S. Central Ave., Chicago, Ill. "Simplex."
 Topping Bros., 123 Chambers St., New York, N. Y.
 Trex—See Trexler Co.
 Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 521.)
 Triumph—See Walker Mfg. Co.
 Twinlock Co.—See Trexler Co.
 XX Century—See Joyce-Cridland Co.
 Victor—See Walker Mfg. Co.
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Badger," "Triumph," "Perfect," "Victor," "Jump-Jack."
 Weed—See American Chain Co.
 Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

JACKS, LIFTING, FOR FORDS—See Jacks, Special, for Fords

JACKS, Special

(Wheeled, Two and Four Wheel Lifting, Tire Seving, etc.—See also Jacks, Lifting; also Jacks, Tire Seving)

- Arrow-Grip Mfg. Co., Glens Falls, N. Y.
 Bruhn Mfg. Co., Columbia & 150th Sts., Hammond, Ind.
 Cady—See Moore Co.
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 E & S—See J B S Mfg. Co.
 Excel—See Randall-Faichney Co.
 Horseshoe—See Minnesota Auto Jack Co.
 Hovey—See Whitestone & Co.
 J B S Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y. "E & S."
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Simplicity Products Mfg. Co., Milwaukee, Wis.)
 Kutler Mfg. Co., Byron, O.
 Marion Malleable Iron Works, Marion, Ind. (See page 221.)
 Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil Dolly."
 Minnesota Auto Jack Co., Providence Bldg., Duluth, Minn. "Horseshoe."
 Moore Co., R. L., 12953 Euclid Ave., Cleveland, O.
 Randall-Faichney Co., 76 Atherton St., (Jamaica Plain), Boston, Mass. "Excel."
 Red Devil Dolly—See Mid-West Mfg. Co.
 Rex—See Zim Mfg. Co.
 Roll-a-Car—See Walker Mfg. Co.

Everything is listed under the NOUN or principal word



WEED CHAIN-JACK

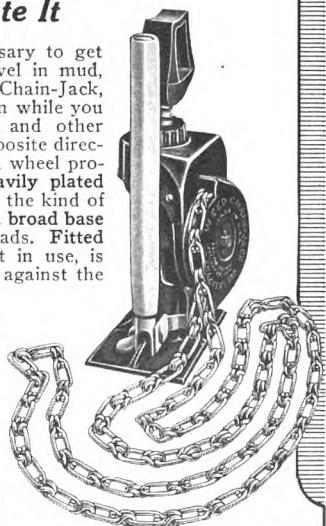
It's Child's Play to Operate It

To operate a Weed Chain-Jack it is not necessary to get down in a cramped, strained position and grovel in mud, grease or dust. To lift a car with the Weed Chain-Jack, simply give a few easy pulls on its endless chain while you stand erect—clear from springs, tire carriers and other projections. To lower a car pull the chain in opposite direction. Never gets out of order. Gears and chain wheel protected by a stamped-steel housing. Chain heavily plated to prevent rusting. Has a strong cap, providing the kind of support from which an axle will not slip, while a broad base prevents the jack from upsetting on uneven roads. Fitted with a long extension handle which, when not in use, is telescoped to its smallest size and rests snugly against the side of the jack.

The 8 inch and 10 inch sizes are made with an auxiliary step. When in operative position this step adds two inches to the height of the jack.

Size	Height When Lowered	Height When Raised	Height When Raised With Aux. Step Up
8 inch	8 inches	12½ inches	14½ inches
10 inch	10 inches	15½ inches	17½ inches
12 inch	12 inches	18½ inches	No Aux. Step.

Mr. Dealer:—Its many selling features mean easy sales and satisfied customers. Order a stock from your jobber today. He will also see that you are supplied with literature and window display material.



Manufactured only by

AMERICAN CHAIN COMPANY, INCORPORATED
BRIDGEPORT, CONN., U. S. A.

In Canada—DOMINION CHAIN CO., Ltd., Niagara Falls, Ontario

General Sales Office: Grand Central Terminal, New York City

District Sales Offices: Boston, Chicago, Philadelphia, Pittsburgh, Portland, Ore., San Francisco.

LARGEST CHAIN MANUFACTURERS IN THE WORLD

JACKS, Special (Continued)

Simplicity Products Mfg. Co.—See Jonas, C. N. & F. W.
 Steel Truck Co., Howell, Mich.
 Stucker, J. M. Ottawa, Kans.
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Roll-a-Car."
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)
 Whetstone Co., John H., Court St., Lapeer, Mich. "Hovey."
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "Rex."

JACKS, Special, for Fords

(Wheeled, Two and Four Wheel Lifting, Etc.)

American—See Fairbanks Co.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
 Diamond Auto Parts Co., 56 Greenpoint Ave., Brooklyn, N. Y. (See page 545.)
 Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American." (See pages 619 to 622).)
 Garage Equipment Co., 241 Fourth Ave. S., Minneapolis, Minn.
 Marion Malleable Iron Works, Marion, Ind. (See page 221.)
 Moore Co., R. L., 13981 Euclid Ave., Cleveland, O.
 Service Station Equipment Co.—See Fairbanks Co.

JACKS, Tire Saving

(For holding car off the floor when not in use; For Two and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.
 Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.
 Ashland Mfg. Co., Ashland, O. "Eureka."
 Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 539.)
 Auto Jack Works, 300-08 E. Michigan St., La Grange, Ind. "Detroit."
 Beard Auto Lift Co., Pleasant Lake, Ind.
 Brooksmith Mfg. Co., 1356-60 Menard St., St. Louis, Mo.
 Brodrib Bros., 59 Congress St., Hartford, Conn.
 Buck, Monroe, Glens Falls, N. Y.
 Buffington & Co., C. A., Berkshire, N. Y.
 Bull Dog—See Toledo Cable Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Detroit—See Auto Jack Works.
 Elite Mfg. Co., Ashland, O. "Reliable." (See page 541.)
 Eureka—See Ashland Mfg. Co.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Hall Air Lock & Railway Supply Co., Oakville, Ia.
 Hoco—See Hoeft & Co.
 Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."
 Indestructo—See Jiffy Jack Co.
 Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."
 M. B.—See Metzsig Bros.

Martin & Co., Edward, 22 S. Clinton St., Chicago, Ill. "Perfection Airrite."

Metzsig Bros., 321 Broadway St., Berlin, Wis. "M. B."
 Mobilift—See National Jack Co.
 Moore—See Walker Mfg. Co.
 National Jack Co., Geat & Evans Sts., Cincinnati, O. "Mobilift."
 National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.
 National Standard Co., Eighth & Howard Sts., Niles, Mich. "Standard."
 Oliver Mfg. Co., 326 S. Desplaines St., Chicago, Ill. "Samson."
 Oshkosh Auto Jack Mfg. Co.—See Oshkosh Auto Specialties Co.
 Oshkosh Auto Specialties Co., 26 Washington St., Oshkosh, Wis. (Distributors for Oshkosh Auto Jack Mfg. Co., Oshkosh, Wis.)
 Perfect—See Pratt Mfg. Co.
 Perfection Airrite—See Martin & Co.
 Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill. "Perfect."
 Racine—See Walker Mfg. Co.
 Reliable—See Elite Mfg. Co.
 S. & S. Automatic Tirease Co., Marysville, Kans.
 Samson—See Oliver Mfg. Co.
 Sedgwick Mfg. Co., Third & Chestnut Sts., Richmond, Ind.
 Springfield Wood Specialty Co., Springfield, N. Y.
 Standard—See National Standard Co.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
 Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."
 U. S. Mfg. Co., Mansfield, O. "Unique."
 Unique—See U. S. Mfg. Co.
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Moore," "Racine."
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 Wilbur Lumber Co., Honey Creek, Wis.
 Will-Burt Co., Orrville, O.

JACKS, Tire Saving, for Fords

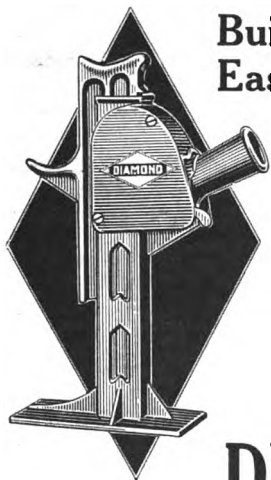
(For holding car off the floor when not in use)

Beard Auto Lift Co., Pleasant Lake, Ind.
 Ezy-Up—See Star Specialty Mfg. Co.
 M. B.—See Metzsig Bros.
 Metzsig Bros., 321 Broadway St., Berlin, Wis. "M. B."
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Ezy-Up." (See page 865.)

JACKS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing**JACKS, WHEELED—See Jacks, Special****JARS, Rubber Battery**

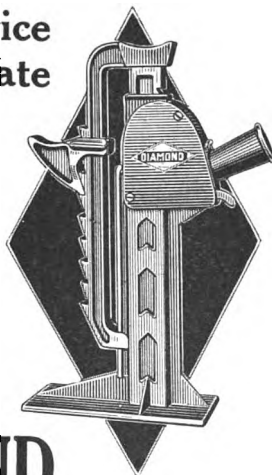
American Hard Rubber Co., 11 Mercer St., New York, N. Y. "Vulcan," "Mercury."
 American Storage Battery Parts Co., 650-60 E. 163d St., Cleveland, O. (Jobbers.) (See page 295.)
 Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.
 Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
 Mercury—See American Hard Rubber Co.

Everything is listed under the NOUN or principal word



Built for Service Easy to Operate

DIAMOND JACKS are the product of long experience and countless experiments. They stand up, in usage, under the tests of both time and tasks. They're good for a lifetime of the hardest work that may continuously — or in a pinch — be required of them.



DIAMOND

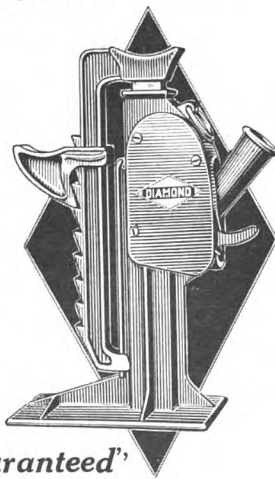
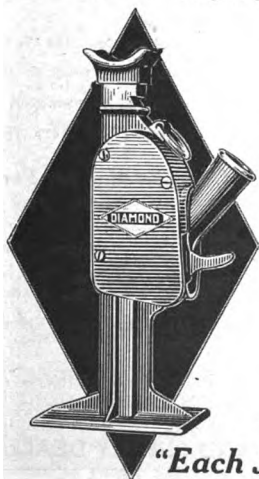
"The Ace of Jacks"



For the protection of DIAMOND JACK users, all DIAMOND JACKS are subjected to rigid tests and inspection before leaving the factory. Each jack is equally a model of simplicity and a marvel of strength. It is

especially adapted to the practical needs of users of pleasure cars and light commercial motor vehicles.

For Excellence of Design, Perfection of Workmanship, Ease of Operation, Surety of Dependability and Certainty of Safety — to say nothing of the High-Grade Materials Used in Construction — DIAMOND JACKS STAND IN A CLASS ALONE.



"Each Jack Fully Guaranteed"

DIAMOND AUTO PARTS CORP.

56 Greenpoint Avenue

Brooklyn, New York

Please mention The Automobile Trade Directory

JARS, Rubber Battery (Continued)

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

United States Rubber Co., 1790 Broadway, New York, N. Y.

Vulcan—See American Hard Rubber Co.

JIGS—See Dies, Jigs, Tools and Fixtures

JIGS, BABBITTING—See Jigs, Main Bearing Connecting Rod Babbitting

JIGS, Brake Band Riveting, for Fords

(For Brake Band Riveting Machines—See Machines, Brake Band Riveting)

Continental Auto Parts Co., 1807 E. 17th Columbus, Ind. (See page 79.)

Hunt Mfg. Co., Geo. L., Boscebel, Wis.

Lewis Co., J. R., Chicago, Ill. (See page 553.)

Universal Tool Co., Garwood, N. J. (See page 971.)

JIGS, Connecting Rod Aligning, for Fords

American—See Fairbanks Co.

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Bean—See Liberty Metal Products Co.

Brodrick Bros., 59 Congress St., Hartford, Conn.

Buckwalter Co., John S., 413-15 N. Mary St., Lancaster, Pa. (See page 377.)

Carswell-Hammond Mfg. Co.—See Zinke Co.

Clement Machine Shop, 301 W. 63th St., New York, N. Y.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Dee Tool Co., John, 1511 Third Ave., Rock Island, Ill.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Eagle Machine Co., 24 N. Noble St., Indianapolis, Ind.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.

Hinckley-Myers Co., Water St., Jackson, Mich.

Lewis Tool Co., 612 Fifth Ave., S., Minneapolis, Minn.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 981.)

Nazett Mfg. Co., 1440 Washington St., Eldora, Ia.

Peoria—See Auto Mechanics Tool Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co.—See Fairbanks Co.

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 623.)

Tribune Engineering Co., Front St., Owego, N. Y.

Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales department for Carswell-Hammond Mfg. Co., Boone, Ia.)

JIGS, DRIVE SHAFT BUSHING REAMING, FOR FORDS—See Reamers, Drive Shaft Bushing**JIGS, Main Bearing and Connecting Rod Babbitting**

Bremer Co., O. B., 222 Division St., Burlington, Iowa.

JIGS, Main Bearing and Connecting Rod Babbitting, for Fords

Bremer Co., O. B., 222 Division St., Burlington, Iowa.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Danielson Tool Co., Fulton St., Wausau, Wis.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.)

(See pages 619 to 622.)

Hanten Machine Co., Watertown, S. Dak.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Splash Oiler Co., 913 E. Washington St., Indianapolis, Ind.

Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 623.)

Tribune Engineering Co., Front St., Owego, N. Y.

Universal Tool Co., Garwood, N. J. "Uteo." (See page 971.)

Utco—See Universal Tool Co.

JIGS, Piston Aligning

American Engine & Airplane Co., 2369 W. Pico St., Los Angeles, Cal.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Peyer, John, 301 W. 63th St., New York, N. Y.

JIGS, Triple Gear Riveting for Fords

Hinckley-Myers Co., Water St., Jackson, Mich.

Miles Mfg. Co.—See Zinke Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Wilson, E. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

JIGS, VALVE END SQUARING—See Blocks, Valve End Squaring**JOBBERs AND SUPPLY DEALERS**

(Covering only Jobbers and Dealers in Automobile Supplies who advertise in this publication)

Associated Automobile Accessories Co., 122 W. 43rd St., New York, N. Y. (See page 723.)

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 137.)

Automobile Supply Co., 1601-03 Michigan Blvd., Chicago, Ill. (See page 481.)

Everything is listed under the NOUN or principal word



Passenger Car Model

REES
DOUBLE WORM GEAR DRIVE
Reg.
U.S.
Pat.
Off.
JACK



There is just one test of a jack that really counts—put it under your car or truck and see how easily and quickly it lifts.

The Rees is the practical jack. The patented double-worm-gear-drive makes it powerful, simple, practically unbreakable. It is the jack that makes you say, "I want one," as soon as you see it work.

No.	Capacity	Height Inches	Lift Inches	Weight	List Price Each	West of the Rockies List Price Each
1	2 Tons	10 $\frac{1}{4}$	5 $\frac{1}{2}$	13 lbs.	\$ 9.00	\$ 9.50
5-A	2 $\frac{1}{2}$ Tons	10 $\frac{1}{4}$	6	14 lbs.	10.00	10.50
2	5 Tons	10 $\frac{1}{4}$	6	22 lbs.	16.00	17.00
3-A	6 Tons	12 $\frac{1}{4}$	6	27 lbs.	20.00	21.00
6-A	6 Tons	14	8	29 lbs.	22.00	23.00
21-A	10 Tons	14 $\frac{3}{4}$	9	46 lbs.	38.00	40.00

A—Designates Foot Lift as shown
Nos. 1, 2, 3-A, 5-A, 6-A packed in standard packages of six.
No. 21-A in standard packages of three.



Motor Truck Model

Catalogue
No. 501

Send for This Book TODAY!

"What the REES JACK Offers You for 1921"

Don't miss the opportunity this book opens for you, an opportunity that must be grasped quickly if you wish to realize it to its full. You'll never know what it really means to sell jacks until you've read it, and having read it you'll want to slip it into your pocket and keep it with you at all times.

Exclusive Manufacturers

Iron City Products Company

Department 21

7501 Thomas Blvd., Pittsburgh, Pa.

Please mention The Automobile Trade Directory

JOBBERs and SUPPLY DEALERS (Continued)

- Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill.
(See page 701.)
- Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 637.)
- Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. (See page 273.)
- Electric Appliance Co., Chicago, Ill.
(See page 385.)
- Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill.
(See page 683.)
- National Auto Supply Co., 1601-03 Michigan Ave., Chicago, Ill. (See page 387.)
- New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)
- Pruden Hardware Co., W. E., 864-68 Eighth Ave., New York, N. Y.
(See page 335.)
- Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 279.)
- Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 701.)
- Wyeth Hardware & Mfg. Co., St. Joseph, Mo. (See page 497.)

JOINT BOOTS—See Boots, Steering Knuckle

JOINT DISCS—See Discs, Universal Joint

JOINTS, Ball

(For spark and throttle connections)

- Birchwood Co., C. W., 713 Dellwood Ave., Jacksonville, Fla.
- Chicago Screw Co., Homan Ave., & Fillmore St., Chicago, Ill. "Security."
(See pages 551 and 827.)
- Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 259.)
- Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.
- Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.
- Mechanical & Electrical Mfg. Co., 2227 Prairie Ave., Chicago, Ill. "Memco."
- Memco—See Mechanical & Electrical Mfg. Co.
- Morgan Mfg. Co., Court St., Keene, N. H.
(See page 755.)
- Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
- Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.
- Security—See Chicago Screw Co.
- Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.
- Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.

JOINTS, Speedometer Swivel

- F. W. S.—See Stewart Mfg. Corp.
- Meikle Mfg. Co., Springfield, Ill. "Springfield."
- Ogden Mfg. Co., Plymouth, Ind.
- Saco—See Speedometer Accessories.
- Speedometer Accessories, Plymouth, Ind. "Saco."

Springfield—See Meikle Mfg. Co.

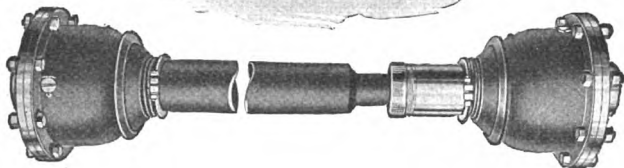
Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

JOINTS, Universal

(For complete drive shaft assemblies—See Shafts, Propeller; for Flexible Couplings—See Couplings, Flexible Shaft)

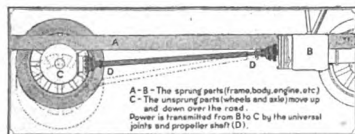
- A. B.—See Easton Machine Co.
- Adell Mfg. Co., Orange, Mass.
- Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.
- Arvac Mfg. Co., Anderson, Ind.
(See page 551.)
- Automotive Products Co., Kresge Bldg., Detroit, Mich. (Sole Distributors for Peters Machine & Mfg. Co., Cleveland, O.)
- BBB—See Blood-Brothers Machine Co.
- Baker Gun & Forging Co., Batavia, N. Y. "Batavia." (See page 605.)
- Batavia—See Baker Gun & Forging Co.
- Bausch Machine Tool Co., Springfield, Mass. (See page 607.)
- Bender Mfg. Co., 539 W. Front St., Plainfield, N. J.
- Blood-Brothers Machine Co., Allegan, Mich. "BBB." (See page 551.)
- C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "S. A. F. E.")
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
- Cooper Flexible Transmission Co., Eighth Ave. & 15th St., Brooklyn, N. Y.
- Detroit—See Universal Products Co.
- Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
- Easton Machine Co., Central St., South Easton, Mass. "A. B."
- Hardy—See Thermold Rubber Co.
- Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."
- K-B—See Hartford Automotive Parts Co.
- Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.
- M. & E.—See Merchant & Evans Co.
- Mechanics Machine Co.—See C. A. S. Engineering Co.
- Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."
- Mutual Machine Co., 25 Wells St., Hartford, Conn. "Warrens."
- Norwalk Auto Parts Co., Norwalk, O.
- Peters Machine & Mfg. Co.—See Automatic Products Co.
- Pick Co., Carl, West Bend, Wis.
(See page 497.)
- R-S Mfg. Co., Dayton, O. "Ream."
- Ream—See R-S Mfg. Co.
- Rockford Drilling Machine Co., ft. Catherine St., Rockford, Ill.
- S. A. F. E.—See C. A. S. Engineering Co.
- Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.
- Snead & Co., Jersey City, N. J.
(See page 379.)
- Spicer Mfg. Corp., South Plainfield, N. J.
(See page 549.)

Everything is listed under the NOUN or principal word



SPICER-equipped vehicles are in high favor with two great classes of experienced motorists: those who are so situated financially that they buy the best from force of habit, and those whose means require them to buy the best for reasons of economy.

Write on your business letterhead for booklet concerning Spicer Universal Joints and Propeller Shafts



SPICER MANUFACTURING CORPORATION - SOUTH PLAINFIELD, N.J.

Spicer

UNIVERSAL JOINTS AND PROPELLER SHAFTS

Please mention The Automobile Trade Directory

JOINTS, Universal (Continued)

Thermoid Rubber Co., Trenton, N. J.
 "Hardy," (See page 561.)
Universal Machine Co., Bowling Green, O.
Universal Products Co., 458 E. Woodbridge
 St., Detroit, Mich. "Detroit."
 Warrens—See Mutual Machine Co.

JUTE WEBBING—See Webbing, Jute and
 Cotton

KEROSENE ATTACHMENTS—See Car-
 buretors, Kerosene; also Heaters, Mix-
 ture; also Manifolds, Intake, for Fords

KEROSENE BURNERS—See Burners, Gaso-
 line and Kerosene

KEROSENE CARBURETORS—See Car-
 buretors, Kerosene; also Heaters, Mix-
 ture; also Manifolds, Intake, for Fords

KEROSENE DEVICES—See Carburetors,
 Kerosene; also Heaters, Mixture; also
 Manifolds, Intake, for Fords

KEROSENE ENGINES—See Engines, Kero-
 sene

KEROSENE FURNACES—See Torches,
 Kerosene

KEROSENE HEATERS—See Heaters, Mix-
 ture; also Manifolds, Intake for Fords

KEROSENE MANIFOLDS FOR FORDS—
 See Manifolds, Intake

KEROSENE MOTORS—See Engines, Mo-
 tor Boat Kerosene

KEROSENE SYSTEMS—See Carburetors,
 Kerosene; also Heaters, Mixture; also
 Manifolds, Intake, for Fords

KEROSENE TORCHES—See Torches,
 Kerosene

KEYS, Acetylene Gas Tank

Buham Tool Co., Louisiana, Mo.
 (See page 395.)

Edelmann & Co., E., 2638 N. Crawford Ave.,
 Chicago, Ill.

Metal Stamping Co., 13th St. & East Ave.,
 Long Island City, N. Y.

Mossberg Co., Frank, Attleboro, Mass.
 (See page 1069.)

Nelson Mfg. Co., A., 2700 Southport Ave.,
 Chicago, Ill. (See page 83.)

Western Brass Mfg. Works, Marshall
 Blvd. & 21st St., Chicago, Ill.
 (See page 263.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St.,
 Newark, N. J. (See page 79.)

KEYS, Machine

Dyett Co., Frank J., Illon, N. Y.

Leard Co., William, New Brighton, Pa.
 (See page 311.)

Moltrup Steel Products Co., Beaver
 Falls, Pa. (See page 909.)

Pennsylvania Shafting Co., Spring City, Pa.

Standard Gauge Steel Co., Beaver Falls.
Whitney Mfg. Co., Hartford, Conn.
 (See page 233.)

KEYS, SPLIT—See Pins, Cotter

KEYS, Switch, for Fords

Bayne Mfg. Co., Bushnell, Ill.
 (See page 669.)

Handy-Dandy—See Relax Co.

Ideal Clamp Mfg. Co., 198-202 Bradford
 St., Brooklyn, N. Y. (See page 243.)

J & B Mfg. Co., Pittsfield, Mass.
 (See page 949.)

Relax Co., Norwood, O. "Handy-Dandy."

KEYS, TANK—See Keys, Acetylene Tank

KEYS, VALVE STEM, FOR FORDS—See
 Pins, Valve Stem

KITS, FIRST AID—See Cases, Medical
 Emergency

KITS, Tire Repair

(See also Cement, Tire; also Patches, Tire; also
 Plugs, Tire; also Sleeves, Tire)

Blue Ribbon—See International Metal Polish
 Co.

General Tire & Rubber Co., East Market St.,
 Akron, O.

Giant Tire & Rubber Co., Lima St. & Western
 Ave., Findlay, O. "M. & M."

Goodrich Co., E. F., S. Main St., Akron, O.
 (See page 963.)

Harligrens Co., Erie, Pa. "Kant-Kum-Off."

Hite Mfg. Co., 833-35 Missionary Ave., Chat-
 tanooga, Tenn. "S-O-S."

International Metal Polish Co., Quill St. &
 Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Kant-Kum-Off—See Harligrens Co.

M. & M.—See Giant Tire & Rubber Co.

Michelin Tire Co., Milltown, N. J.
Page-Lester Co., 2644 Indiana Ave., Chicago,
 Ill. "Tite-Wad."

Perma-Loc Mfg. Co., Wilkes-Barre, Pa.
 (See page 705.)

Pioneer Rubber Products Co., Michigan Ave.
 & Kansas St., St. Louis, Mo. "Ti-Re-Pair."

S-O-S—See Hite Mfg. Co.

Spreckles-Savage Tire Co., Main & Sicard
 Sts., San Diego, Cal.

Sampson—See Stevens & Co.

Stevens & Co., 375 Broadway, New York.
 N. Y. "Sampson." (See page 201.)

Swanson Supply Co., 2124 Westlake Ave.,
 Seattle, Wash.

Ti-Re-Pair—See Pioneer Rubber Products Co.

Tite-Wad—See Page-Lester Co.

KITS, Tool

(For Tool Bags—See Bags, Tool)

Becco—See Michigan Motor Specialties Co.

Channon Co., H., 150 N. Market St., Chicago,
 Ill. "Rival."

Chicago Tool & Kit Mfg. Co., 12 N. Market
 St., Chicago, Ill.

Crescent Mfg. Co., 129 Reade St., New
 York, N. Y. (See page 759.)

Cushman Co., Inc., Champaign, Ill.
 (See page 479.)

Everything is listed under the NOUN or principal word



—a powerful
rugged
transmission
unit

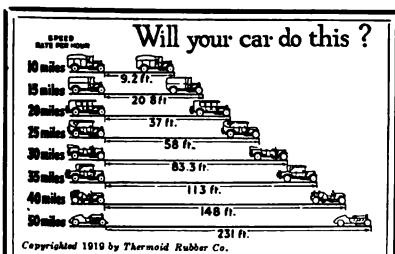
Build these advantages into your car:

By adopting ARVAC joints get *greater strength* at every vital point between transmission and rear axle. In light and heavy passenger cars and trucks of well-known makes ARVAC joints have proven their unequalled flexibility, accessibility, dependability.

Universal Joints

Forged steel housing. Swaged tube. Yoke bushings completely enclosed by yoke jaws. Positive lubrication. Grease tight construction. All wearing parts case hardened—ground to size.

ARVAC MANUFACTURING COMPANY
ANDERSON, INDIANA



This chart shows the distance in which a car should stop, at any given speed, if the brakes are efficient.

One smash-up every minute

THERE were nearly 600,000 motor accidents last year—sixty smash-ups every hour. Approximately 65 per cent of these accidents occurred under 15 miles an hour. Statistics such as these show clearly the new importance which good brakes have assumed.

Make brake inspection an important part of every overhaul job. The motorist will respond to your interest in his safety.

Thermoid Hydraulic Compressed Brake Lining contains 40 per cent more material than ordinary lining. It wears down slowly, without grabbing or slipping, and maintains its gripping power even when worn as thin as cardboard. Write for the Thermoid Sales Plan.

Thermoid Rubber Company
Trenton, N. J.



Universal Joints for Vehicle and Marine Motors

Silently, Blood-Brothers' Universal Joints transmit maximum power in vehicle and motor boat.

They have given satisfaction for 16 years.

Write for Complete Information

Blood-Brothers Machine Co.

Pioneer Builders of Universal Joints
Allegan, Michigan

F. SOMERS PETERSON CO.

San Francisco, Cal., Western Representative



"SECURITY" BALL JOINTS

Not too tight nor too loose—Always in proper adjustment—No Cotter Pins to lose—No Screws to come out—Easily put in place—Impossible to come apart—Ball Head in line with rod—Firm Joint—No Rattle—

THE CHICAGO SCREW CO.
Homan Ave. & Fillmore St., Chicago

Please mention The Automobile Trade Directory

KITS, Tool (Continued)

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
 Herbrand Co., 109-25 E. State St., Fremont, O.
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 National—See Whitaker Mfg. Co.
 Pomo—See Whitaker Mfg. Co.
 Rival—See Channon Co.
 Sterling Products Co., 35 S. Desplaines St., Chicago, Ill. (See page 997.)
 Sterling—See Whitaker Mfg. Co.
 Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y.
 Vichek Tool Co., Cleveland, O.
 Whitaker Mfg. Co., Chicago, Ill. "National," "Sterling," "Pomo."
 (See page 1075.)

KITS, Tool, for Fords

Chicago Tool & Kit Mfg. Co., 13 N. Market St., Chicago, Ill.
 Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."
 Sterling Products Co., 35 S. Desplaines St., Chicago, Ill. (See page 997.)
 Peerless—See Corcoran Mfg. Co.

KNEE SHIELDS—See Shields, Motorcycle Knee**KNIVES, TIRE—See Knives, Tire Repair****KNIVES, Tire Repair**

Hyde Mfg. Co., Eastford Rd., Southbridge, Mass.
 Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.
 Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.

KNOCKOUT PUNCHES—See Punches, Center, Prick and Drift**KNUCKLE BOOTS—See Boots, Steering Knuckle****KNUCKLE CASES—See Boots, Steering Knuckle****KNUCKLES, STEERING—See Axles, Front; also Forgings****LACE, FABRIC—See Lacing, Fabric****LACE, LEATHER—See Leather, Rawhide Lace****LACE, WEBBING and CORD, Coach**

(See also Trimmings, Cloth and Carpet)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 165.)
 Columbia—See Horstmann Co.
 Horstmann Co., Wm. H. Fifth & Cherry Sts., Philadelphia, Pa. "Columbia."
 Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

LACING, BELT—See Lacing, Fabric; also Leather, Rawhide Lace**LACING, BONNET—See Lacing, Fabric; also Leather, Rawhide Lace****LACING, Fabric Radiator**

(For preventing motor hoods or bonnets from rattling)

American Mills Co., 39 W. 19th St., New York, N. Y. (See pages 579 and 580.)
 Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritez."
 Dafos-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco." "Ustus."
 Deco—See Dafos-Eustice Co.
 Fabritez—See Bond Co.
 Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa.
 Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 119.)

Jaleau—See Uniform Hood Lace Co.
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Rubberite."
 Mikesell Bros. Company, 156 N. La Salle St., Chicago, Ill. (See page 315.)
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Multibestos Co., Walpole, Mass. (See page 615.)

Powers Mfg. Co., Waterloo, Ia. (See page 581.)

Rochester Woven Belting Co., Commercial St., Rochester, N. Y. "Tuftex."
 Rubberite—See McElroy Belting & Hose Co.
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 309.)

Sutherland Co., F. L., 139 Beaublein St., Detroit, Mich. (See page 609.)

Tuftex—See Rochester Woven Belting Co.
 Uniform Hood Lace Co., 1509 College Ave., Indianapolis, Ind. "Jaleau."
 Ustus—See Dafos-Eustice Co.

LACING, HOOD—See Lacing, Fabric Radiator; also Leather, Rawhide Lace**LACING, LEATHER RADIATOR—See Leather, Rawhide Lace****LACQUERS, CELLULOID—See Cleaners, Celluloid****LACQUERS, LAMP—See Enamels, Brass; also Lacquers, Metal****LACQUERS, Metal**

American Lacquer Co., Bridgeport, Conn.
 Barrett Varnish Co., 233 W. Lake St., Chicago, Ill.
 Bulls Eye—See Zinsser & Co.
 Egyptian Lacquer Mfg. Co., 5 E. 40th St., New York, N. Y.
 Hanson & Van Winkle Co., Newark, N. J.
 Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 378.)
 Maas & Waldstein Co., New York, N. Y.
 Nikolas & Co., G. J., Chicago, Ill.
 Van Schaack Bros. Chemical Works, 3358 Avondale Ave., Chicago, Ill.
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

LAG SCREWS—See Screws, Coach**LAMP ADAPTERS—See Adapters, Electric Lamp**

Everything is listed under the NOUN or principal word

SHOULD YOU REQUIRE

MUFFLER PIPES EXHAUST PIPES WIRE PIPES

OR PIPE OR TUBE BENDS OF ANY
NATURE WHICH NECESSITATE A SUPER-
LATIVE DEGREE OF

ACCURACY
and
PRECISION

CALL ON THE

F. C. KENT COMPANY

IRVINGTON, NEW JERSEY

Specialty Manufacturers

Service, Workmanship, Material
UNEXCELLED



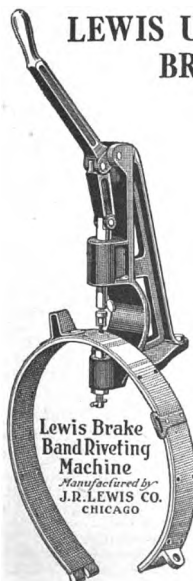
Reg. U. S. Pat. Off.

Send us your blue prints
or samples so that we may
quote attractive prices

LEWIS UNIVERSAL BRAKE BAND RIVETING MACHINE

**For Fords and
and all other
makes of
Cars**

will save more
than half the
time in cutting
out old rivets
and replacing
brake linings
with split rivets.
Rivets applied
with this ma-
chine are well
under the sur-
face and will
not score the
brake drum.
Any boy can do
the job quickly.



Lewis Brake
Band Riveting
Machine
Manufactured by
J.R. LEWIS CO.
CHICAGO

Attractive Proposition to Jobbers
Wt. 30 lbs., Price \$27.50



The Easy Way to Sell Automobile Lamp Bulbs

The selling of automobile lamp bulbs is made wonderfully simple through the use of this Westinghouse Automobile Display Cabinet. It contains the lamps in greatest demand for more than nine-tenths of all cars.

The cabinet is of substantial construction, attractively printed in orange and black, and will present a striking appearance when placed in your window or on your counter. This silent salesman will so impress your customers that but little sales effort will be necessary—in other words—this cabinet will actually sell automobile lamp bulbs for you.

In this assortment are 170 lamps—a variety selected with great care. They are the proper lamps for equipping the majority of automobiles.

Westinghouse Mazda Lamp Bulbs for Automobiles and Flashlights

come in all sizes, candlepower ratings and voltages, for automobile headlights, for interior illumination, pocket flashlights, etc. The name Westinghouse itself is a warranty of superior quality.

There is a Westinghouse Lamp for every purpose and we invite dealers to correspond with our nearest District Office:

Westinghouse Lamp Company
165 Broadway New York City

DISTRICT SALES OFFICES

Atlanta, Ga.	1321 Candler Bldg.
Boston, Mass.	136 Federal Street
Buffalo, N. Y.	Elliot Square
Chicago, Ill.	Courway Bldg.
Cincinnati, Ohio.	Traction Bldg.
Cleveland, Ohio.	Swetland Bldg.
Columbus, Ohio.	Traction Terminal Bldg.
Dallas, Texas.	Cotton Exchange Bldg.
Denver, Colo.	Gas & Electric Bldg.
Detroit, Mich.	Dime Savings Bank Bldg.
Kansas City, Mo.	1013 Baltimore Avenue
Los Angeles, Cal.	801 Van Ness Bldg.
Memphis, Tenn.	Exchange Bldg.
Milwaukee, Wis.	Majestic Bldg.
Minneapolis, Minn.	Metropolitan Life Bldg.
New Orleans, La.	Maison-Blanche Bldg.
New York, N. Y.	510 West 23rd Street
Philadelphia, Pa.	1005 Market Street
Pittsburgh, Pa.	Union Nat'l Bank Bldg.
San Francisco, Cal.	First National Bank Bldg.
Seattle, Wash.	Alaska Bldg.
Syracuse, N. Y.	708 Keith Bldg.
St. Louis, Mo.	Boatmen's Bank Bldg.
Washington, D. C.	335 Southern Bldg.

Westinghouse

Please mention The Automobile Trade Directory

LAMP BRACKETS—See Brackets, Side and Tail Lamp

LAMP BULB BOXES—See Cases, Extra Lamp Bulb

LAMP BULB CASES—See Cases, Extra Lamp Bulb

LAMP BULBS—See Lamps, Miniature Incandescent

LAMP BURNERS—See Burners, Acetylene Lamp

LAMP CONNECTORS—See Connectors, Electric Lamp; also Connectors, Acetylene Lamp; also Tubing, Soft Rubber

LAMP COVERS—See Covers, Lamp

LAMP DIMMERS—See Dimmers

LAMP ENAMELS—See Enamels, Lacquers and Finishes, Brass

LAMP GASKETS—See Gaskets, Headlight Lenses

LAMP GLASSES—See Glasses, Lamp

LAMP LACQUERS—See Enamels, Brass; also, Lacquers, Metal

LAMP LENSES—See Dimmers; also Glasses, Lamp

LAMP LIGHTERS—See Lighters, Acetylene Lamp

LAMP REFLECTORS—See Reflectors, Mirror

LAMP SOCKETS—See Sockets, Electric Lamp

LAMP TUBING—See Tubing, Soft Rubber

LAMP WICKS—See Wicks, Lamp

LAMPS, Acetylene Head

Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)

Columbia—See Hine-Watt Mfg. Co.

Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

H & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "H. & J."

Hall Lamp Co., C. H., Detroit, Mich. "Solar." (See page 495.)

Hine-Watt Mfg. Co., 1725 S. Michigan Ave., Chicago, Ill. "Columbia."

Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 686.)

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 53d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

LAMPS, ACETYLENE MOTORCYCLE—See Lamps, Motorcycle Acetylene

LAMPS, ACETYLENE TRACTOR—See Headlights, Tractor Acetylene

LAMPS, DASH—See Lamps, Electric Dash

LAMPS, Electric Dash or Gage

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)

Amco—See Aid Mfg. Co.

Asch and Co., Inc., 18-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 243.)

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Columbus Auto Brass Co., Columbus, O. (See page 477.)

Connecticut Telephone & Electric Co., Meriden, Conn.

Cowles & Co., C., New Haven, Conn.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Douglas & Rudd Mfg. Co., Bronson, Mich.

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 243.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Holmes & George L., 1733 Broadway, New York, N. Y. (Eastern Distributors for Cuno Lamps.)

Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.

Liberty Works, Egg Harbor City, N. J. (See page 555.)

Loewus, Edwin H., 304 W. 54th St., New York, N. Y.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Metal Specialties Mfg. Co., 238-52 N. Kedzie Ave., Chicago, Ill. "Presto."

Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 169.)

Morse, Frank W., 288 Congress St., Boston, Mass. (See page 79.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Motor Specialties Co., Waltham, Mass. "Tuway."

Murphy, H. J., Reading, Mass.

Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.

Presto—See Metal Specialties Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

S-H—See Stuart-Howland Co.

Seco—See Spielman Electric Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Everything is listed under the NOUN or principal word

Wise Dealers Stock *Presto* Specialties

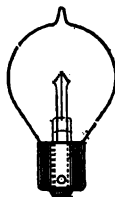
Big Sellers—Liberal Discounts

Ask Your Jobber for Prices on

Presto Dash Lamps,
Trouble Lamps,
Plugs, Lamp Sockets, Con-
nectors, Push and Pull Switches,
Electric Cigar Lighters, Bulb
Testers, Under the Hood Elec-
tric Heaters, Body Brace and
Running Board Support for
Ford Cars and Alweather Pro-
tectors for Ford Cars.

Metal Specialties Mfg. Co.
338-352 North Kedzie Ave., Chicago

FEDERAL Mazda Automobile Lamps



There is a steady profit in the sale of automobile lamps just as there is steady profit in the sale of gasoline and other automobile supplies. Automobile lamps are a staple necessity that will bring car owners into your store frequently as customers for other things.

Federal MAZDA automobile lamps are in constant demand. They are easy to handle and bring you a steady profit at very small investment.

For further information write to
**Federal Miniature Lamp
Division**

National Lamp Works of General
Electric Company
6 EAST 39th ST. NEW YORK CITY

546-282



Size 8"x2 1/4"

**COWL LIGHT WITH
PARKING JEWEL**

No. 278



Cut Half Size
Size Over All 2"x5 1/2"
Parking Jewel
Red and Green

Cylinder Light with Switch
Size 4"x1 1/4"

No. 254



Revolving Cylinder Turns Light
On or Off

748-282



Size 8"x2 1/4"

Send for Catalog of Auto
Vases and Lighting Fix-
tures, Window Regulators,
Collapsible Lunch Tables,
Etc.

SUPERIOR LAMP MFG. CO.
150 West 52nd St., New York
Eastern Distributors

LIBERTY WORKS MANUFACTURERS

Main Office and Works: Egg Harbor City, New Jersey, U. S. A.

Please mention The Automobile Trade Directory

LAMPS, Electric Dash or Gage (Continued)

Tuway—See Motor Specialties Co.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor—See Corcoran-Victor Co.

LAMPS, ELECTRIC GAGE — See Lamps, Electric Dash**LAMPS, Electric Hand or Inspection**

(Lamp and flexible cord for work around car)

Accesso Mfg. Co., 99 State St., Boston, Mass. "Ideal." (See page 239.)
 Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O. "Auto-Eyes."
 Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)
 Amco—See Aid Mfg. Co.
 American Enamel Co., Neville St., Providence, R. I. "Britelite."
 Ash and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 243.)
 Auto-Eyes—See Adams-Bagnall Electric Co.
 Auto Specialty Co., 243 Bloomfield Ave., Passaic, N. J.
 Britelite—See American Enamel Co.
 Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.
 Cellbeam Mfg. Co., 344 W. 57th St., New York, N. Y.
 Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Cowles & Co., C., New Haven, Conn.
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
 Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."
 Danno—See Dannenhirsch Co.
 De Roy Accessories Co., 327 Main Ave. W., Spokane, Wash.
 Douglas & Rudd Mfg. Co., Bronson, Mich.

ELECTRO-LITE—See Electric Arts Co.

Electric Arts Co., 14 E. Read St., Baltimore, Md. "Electro-Lite." (See page 535.)
 Electro-Lite—See Electric Arts Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 243.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Handy—See Chicago Electric Mfg. Co.
 Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.
 Hunt Trouble Light Co., Lima, O.
 Ideal—See Accesso Mfg. Co.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.
 Metal Specialties Mfg. Co., 328-53 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 Morse, Frank W., 260 Congress St., Boston, Mass. (See page 79.)
 Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Niagara Searchlight Co., Eighth St. & Ferry Ave., Niagara Falls, N. Y.

Nitelite—See Providence Electric Mfg. Co.
 Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Stickalite."
 Presto—See Metal Specialties Mfg. Co.
 Providence Electric Mfg. Co., 23 Broad St., Providence, R. I. "Nitelite."
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 S.-H.—See Stuart-Howland Co.
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
 Stickalite—See Premier Electric Co.
 Stuart-Howland Co., 181-41 Federal St., Boston, Mass. "S.-H."
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Zinke Co., 1223-25 Michigan Ave., Chicago, Ill. (Sales Department for A. S. Brock Rubber Co., Boston, Mass.)

LAMPS, ELECTRIC HEAD—See Headlights, Electric**LAMPS, Electric Head, for Fords**

American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 557.)
 B. & L. Auto Lamp Co., 108-05 Mott St., New York, N. Y.
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 243.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 686.)
 K-D Lamp Co., Cincinnati, O. (See page 485.)
 Rialto—See American Auto Lamp Co.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor—See Corcoran-Victor Co.

LAMPS, ELECTRIC INSPECTION — See Lamps, Electric Hand

LAMPS, ELECTRIC MOTORCYCLE—See Lamps, Motorcycle Electric

LAMPS, Electric Side and Tail

A-K—See Angsten-Kox Co.
 Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.
 Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O. "Auto-Eyes."
 American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 557.)
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (Tail lamps only.) (See page 537.)
 Auto-Eyes—See Adams-Bagnall Electric Co.
 Auto Fender Safety Lamp Co., Corinth, N. Y.

Everything is listed under the NOUN or principal word

**ELECTRIC
GAS
OIL**

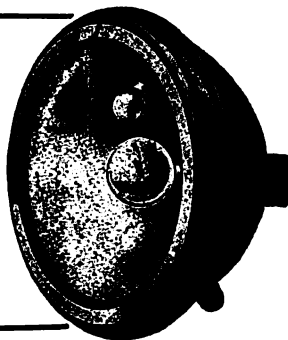
LAMPS

of the Highest Quality

AT MODERATE COST

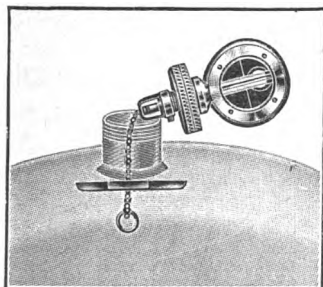
Dealers write for Catalog and Prices.

THE JNO. W. BROWN MFG. CO.
COLUMBUS, OHIO



The Schlaich Lock

FOR BOYCE MOTO METERS



A positive protection against breakage as well as theft. Can be installed by a child. No keys to bother with when filling radiator. Made in four sizes.

No. 1, for "De Luxe" and Truck and "Tractor" Models.....\$2.00
No. 2, for "Standard" and "Universal"..... 1.50
No. 3, for "Junior" and "Ford"..... 1.50
No. 4, for "All Overland Types"..... 1.50

ATTRACTIVE DISCOUNT TO DEALERS

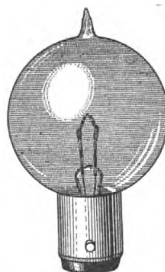
Write for Details

Indorsed and used as regular equipment on DE LUXE MODEL MOTO METERS by The Moto Meter Company, Inc.

The J. C. McAdams Sales Company
51 East 42d Street New York, N. Y.

American Auto Lamp Co.

Manufacturers of

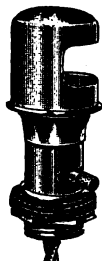


**Tungsten
and
Nitrogen
Auto
Lamps**

Write for Attractive Discounts
Immediate Deliveries
Quality Guaranteed

American Auto Lamp Co.

Union Hill, New Jersey



**Metal Dash
Model 376**

Auto Connectors, Sockets, Gauge Lamps, Trouble Lamps and Switches

- ❑ Why are you not handling our goods?
- ❑ We save you money.
- ❑ We make delivery at once.
- ❑ We give you good goods.
- ❑ Try us with your next order.
- ❑ Send for catalog and price list.



Model 111

Aid Manufacturing Company, Inc.

2625-2631 Stewart Ave., Chicago

See Your Jobber

Please mention The Automobile Trade Directory

LAMPS, Electric Side and Tail (Continued)

Automatic Signal & Sign Co., 905 Rex Ave. N. E., Canton, O. "Dependable." (Tail lamps only.)
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Bac-Lite Corp., 20 E. Lake St., Chicago, Ill. (Tail lamps only.)
 Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)
 Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."
 Columbus Auto Brass Co., Columbus, O. "Pathfinder." (See page 477.)
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."
 Cowles & Co., C., New Haven, Conn.
 Dependable—See Automatic Signal & Sign Co.
 Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Electric Auto-Lite Corp., Toledo, O.
 English & Merrick Co., New Haven, Conn. (See page 571.)
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass. (Tail lamps only.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 485.)
 Hammer Co., E. A., 1839 Euclid Ave., Cleveland, O.
 Handy—See Chicago Electric Mfg. Co.
 Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 686.)
 K-D Lamp Co., Cincinnati, O. (See page 485.)
 Kilborn-Sauer Co., Post Road, Fairfield, Conn.
 Neverout—See Rose Mfg. Co.
 Pathfinder—See Columbus Auto Brass Co.
 Proos Mfg. Co., Grand Rapids, Mich.
 Rosco—See Rosen & Co.
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 S & M Lamp Co., 118 W. 36th Pl., Los Angeles, Cal.
 Silvey Electric Co., 10-16 S. Canal St., Dayton, O.
 Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)
 Solar—See Hall Lamp Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor—See Corcoran-Victor Co.
 Warnola Mfg. Co., 73 Wooster St., New York, N. Y.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Yankee—See American Auto Lamp Co.

LAMPS, Electric Side and Tail, for Fords

A-K—See Angsten-Kox Co.
 American Auto Lamp Co., Union Hill, N. J. "Rialto." (See page 557.)
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (See page 537.)
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Bac-Lite Corp., 20 E. Lake St., Chicago, Ill.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)
 Columbus Auto Brass Co., Columbus, O. (See page 477.)
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."
 Culver-Stearns Mfg. Co., Detroit, Mich.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 243.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 686.)
 K-D Lamp Co., Cincinnati, O. (See page 485.)
 Kilborn-Sauer Co., Post Road, Fairfield, Conn.
 Neverout—See Rose Mfg. Co.
 Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."
 Perko—See Perkins Marine Lamp Corp.
 Rialto—See American Auto Lamp Co.
 Rosco—See Rosen & Co.
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
 Victor—See Corcoran-Victor Co.

LAMPS, Electric Speedometer, for Fords

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lamps.) (See page 243.)
 Bull Pup—See Metal Specialties Mfg. Co.
 Bull Terrier—See Metal Specialties Mfg. Co.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Bull Pup," "Bull Terrier," "Presto." (See page 555.)
 Presto—See Metal Specialties Mfg. Co.

LAMPS, ELECTRIC TAIL—See Lamps, Electric Side and Tail**LAMPS, GAGE—See Lamps, Electric Dash or Gage****LAMPS, HAND—See Lamps, Electric Hand****LAMPS, INSPECTION—See Lamps, Electric, Hand or Inspection**

Everything is listed under the NOUN or principal word

LAMPS or BULBS, Miniature Incandescent

Advance Lamp Works, 351-51 W. Superior St. Chicago, Ill. "Triangle."
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Everready."
 Banner Electric Division of National Lamp Works, Youngstown, O.
 Brilliant Electric Division of National Lamp Works, 4508 Hough Ave., Cleveland, O.
 Bryan-Marsh Division of National Lamp Works, 523-33 S. Wabash Ave., Chicago, Ill.
 Buckeye Electric Division of National Lamp Works, 46th & Perkins Ave., Cleveland, O.
 Bryan-Marsh Division of National Lamp Works, 523-33 S. Wabash Ave., Chicago, Ill.
 Colonial Electric Division of National Lamp Works, Warren, O.
 Columbia Lamp Division of National Lamp Works, 706 Chestnut St., St. Louis, Mo.
 Continental Electric Lamp Co., 1438 Bryan Pl., Chicago, Ill.
 Davis Tungsten Lamp Co.—See United States Automobile & Electrical Accessories Co.
 Domestic Tungsten Lamp Co., 418 Tenth St., West New York, N. J.
 Edison Lamp Works of General Electric Co., Sussex St., Harrison, N. J.
 Eveready—See American Ever Ready Works
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for "Tungsol" Lamps.) (See page 243.)
 Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 926 S. Michigan Ave., Chicago, Ill. (See page 561.)
 Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 6 E. 35th St., New York, N. Y. (See page 555.)
 Fostoria Lamp Division of National Lamp Works, Fostoria, O.
 General Lamp Division of National Lamp Works, Cleveland, O.
 International Incandescent Lamp Works, Bergenline & Franklin Sts., Union Hill, N. J. "Ora." (See page 305.)
 Jaeger Co., H. J., 280-300 Park Ave., Weehawken, N. J. "Nitros."
 Mac Kno Glare—See Premier Incandescent Lamp Works.
 Mannweiler Co., A. C., 1413-15 Calhoun St., Fort Wayne, Ind.
 Miniature Incandescent Lamp Corp., 25 Eighth Ave., Newark, N. J. "Tungsol," "Tullite."
 National Lamp Works of General Electric Co., 106 Nela Park, Cleveland, O.
 Nelco—See New Era Lamp Co.
 New Era Lamp Co., 12 Sloane St., South Orange, N. J. "Nelco."
 Nitro—See Jaeger Co.
 Ora—See International Incandescent Lamp Works.
 Packard Lamp Division of National Lamp Works, Warren, O.
 Premier Incandescent Lamp Works, 222 Washington St., Hoboken, N. J. "Mac Kno Glare."
 Shelby Lamp Division of General Electric Co., Shelby, O.
 Sterling Electric Lamp Division of National Lamp Works, Warren, O.
 Sunbeam Lamp Division of National Lamp Works of General Electric Co., 500 E. Clinton St., Chicago, Ill.
 Triangle—See Advance Lamp Works.
 Tullite—See Miniature Incandescent Lamp Corp.
 Tungsol—See Faw Co.
 United States Automobile & Electrical Accessories Co., 208 W. 59th St., New York, N. Y. (Sole Distributors for Davis Tungsten Lamp Co., Guttenberg, N. J.)

U. S. Incandescent Lamp Co., Laclede Bldg., St. Louis, Mo.
 Universal Electric Lamp Co., 24 Treat Pl., Newark, N. J.
 Weehawken Tungsten Lamp Co., 340 Hudson Ave., West Hoboken, N. J.
 Westinghouse Lamp Co., 165 Broadway, New York, N. Y. (See page 553.)
 Westinghouse-McCandless Co., 406 W. 31st St., New York, N. Y.

LAMPS, Motorcycle Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 455.)
 Solar—See Hall Lamp Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

LAMPS, Motorcycle Electric

Hall Lamp Co., C. M., Detroit, Mich. "Solar." (See page 455.)
 Indiana Lamp Co.—See Zinke Co.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
 Solar—See Hall Lamp Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

LAMPS, Motorcycle Oil

Indiana Lamp Co.—See Zinke Co.
 Neverout—See Rose Mfg. Co.
 Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

LAMPS, OIL MOTORCYCLE—See Lamps, Motorcycle Oil

LAMPS, Oil, Side and Tail

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 561.)
 Adlake—See Adams & Westlake Co.
 American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 557.)
 B. & L. Auto Lamp Co., 108-05 Mott St., New York, N. Y.
 Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)
 Champion—See Dietz Co.
 Convoy—See Dietz Co.
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Dainty—See Dietz Co.
 Dietz Co., R. E., 60 Laight St., New York, N. Y. "Dainty," "Royal," "Champion," "Royal Junior," "Iron-Clad," "Monitor," "Pilot," "Convoy."

Everything is listed under the NOUN or principal word

LAMPS, Oil, Side and Tail (Continued)

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E & J."

Hall Lamp Co., O. M., Detroit, Mich. (See page 485.)

Indiana Lamp Co.—See Zinke Co.

Iron-Clad—See Diets Co.

Monitor—See Diets Co.

Neverout—See Rose Mfg. Co.

Pilot—See Diets Co.

Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)

Royal—See Diets Co.

Royal Junior—See Diets Co.

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

Yankee—See American Auto Lamp Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

LAMPS, OIL TRACTOR—See Lamps, Tractor Oil

LAMPS, REEL—See Lamps, Electric Hand; also Lights, Spot

LAMPS, SIDE—See Lamps, Electric Side and Tail; also Lamps, Oil

LAMPS, SPEEDOMETER—See Lamps, Electric Dash

LAMPS, SPEEDOMETER, FOR FORDS—See Lamps, Electric Speedometer

LAMPS, SPOT—See Lights, Spot

LAMPS, SWIVEL—See Lights, Spot

LAMPS, TAIL—See Lamps, Electric Side; also Lamps, Oil, Side and Tail

LAMPS, TRACTOR ACETYLENE—See Headlights, Tractor Acetylene

LAMPS, TRACTOR ELECTRIC—See Headlights, Tractor Electric

LAMPS, Tractor Oil

Adams & Westlake Co., Chicago, Ill. (See page 561.)

LAMPS, TUNGSTEN—See Lamps, Miniature Incandescent

LAMPS OR HEADLIGHTS, ELECTRIC—See Headlights, Electric

LANDING GEARS, AIRPLANE—See Gears, Airplane Landing

LANTERNS, HAND—See Lights, Electric Flash

LAP ROBES—See Robes

LAPPING TOOLS—See Tools, Cylinder Lapping

LAPS, CYLINDER—See Tools, Lapping

LATCHES, EMERGENCY BRAKE, FOR FORDS—See Handles, Emergency Brake

LATCHES, HOOD—See Fasteners, Hood

LATHE CHUCKS—See Chucks, Lathe

LATHE CRANKSHAFT TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

LATHE CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding

LATHE DOGS—See Dogs, Lathe

LATHE MILLING ATTACHMENTS—See Attachments, Lathe Milling

LATHE TOOL HOLDERS—See Holders, Lathe and Planer Tool

LATHE TOOLS—See Tools, Lathe

LATHES, Airplane Strut

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

LATHES, Aircraft Propeller Turning

Defiance Machine Works, 484 Perry St., Defiance, O.

LATHES, Bench or Precision

Ames Co., B. C., Ames St., Waltham, Mass.

Catact—See Hardinge Bros.

Elgin Tool Works, 61-69 N. State St., Elgin, Ill.

Goodell-Pratt Co., Greenfield, Mass.

Hardinge Bros., 1770 Berneau Ave., Chicago, Ill. "Catact."

National Premier Machine Tool Co., 1512 Lakeside Ave., Cleveland, O.

Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)

Remington Tool & Machine Co., 88 Broad St., Boston, Mass.

Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.

Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.

Sloan & Chase Mfg. Co., 351 Sixth Ave., New York, N. Y.

South Bend Lathe Works, 600 E. Madison St., South Bend, Ind. (See page 563.)

Stark Tool Co., 218 Moody St., Waltham, Mass.

Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.

Wade-American Tool Co., 49-59 River St., Waltham, Mass.

Waltham Machine Works, Newton & Cutter Sts., Waltham, Mass.

Everything is listed under the NOUN or principal word

A Complete Auto Bulb Stock

is contained in the cabinet here illustrated. From it you can meet the needs of almost any American-made gasoline passenger car with strong, rugged

Federal MAZDA Bulbs

The variety is nearly perfect. The keeping and displaying of your bulb stock is made easy. Make a liberal profit on a small investment.

FEDERAL MINIATURE LAMP DIVISION

National Lamp Works of General Electric Co.

926 So. Michigan Ave., Chicago

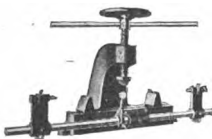


3F General
Utility Arbor
Press

GEIER EFFICIENCY PRESSES

An Ideal Arbor Press, for all automobile wheels, and Ford pistons, crank-shafts, driving-shafts, front axles, drums and other parts of automobiles, trucks and tractors.

This press will straighten all automobile and various tractor crank-shafts. It has a dial indicator, reading in half-thousandths to one-quarter of an inch.



2F Special Crank Shaft
Straightening Press

Literature furnished on request.

THE P. A. GEIER CO.

Cleveland, Ohio

Plant No. 2

540 E. 105th St.

RE-ATOMIZER

BALL & BALL PATENT

"Makes Bad Gasoline Good"

Better Distribution — Less Trouble

Ford \$350
Model

Dodge \$375
Model

FLOMETER

"Miles per gallon at a glance"

A dash instrument registering the actual consumption of gas at any speed, at all times. Anything out of order shows up in increased use of gasoline thru the FloMeter.



DETROIT

1886

1921

ADLAKE

TRUCK LAMPS are made to withstand the severe requirements of truck service. Write for catalogue.

The Adams & Westlake Co.

New York

Chicago

Philadelphia



Please mention The Automobile Trade Directory

LATHES, Crank Pin

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
 Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.
 Tindell-Morris Co., Eddystone, Pa.
 Wickes Bros., 2501 Water St., Saginaw, Mich.

LATHES, Engine

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
 Barker & Co., Wm., Pleasant & Wheeler Sts., Covington, Ky.
 Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.
 Barnes Drill Co., 314-30 Chestnut St., Rockford, Ill.
 Betts Machine Co., Rochester, N. Y.
 Boggs Co., T. Tyler, Abbott Bldg., Philadelphia, Pa. "Landis."
 Boye & Emmes Machine Tool Co., 2245-51 Spring Grove Ave., Cincinnati, O.
 Bradford Machine Tool Co., 687 Evans St., Cincinnati, O.
 Bridgeford Machine Tool Works, 177 Winton Rd., Rochester, N. Y.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carroll-Jameson Machine Tool Co., Davis Road, Batavia, O.
 Champion Tool Works, 4955 Spring Grove Ave., Cincinnati, O.
 Chord Lathe Co., Ninth St. & New York Ave., Newcastle, Ind.
 Cincinnati Lathe & Tool Co., 3207-11 North St. (Oakley), Cincinnati, O. "Cintilathe."
 Cintilathe—See Cincinnati Lathe & Tool Co.
 Cisco Machine Tool Co., Elmore & C. H. & D. Ry., Cincinnati, O.
 Conradson Machine Tool Co.—See Ryerson & Son.
 Dalton Mfg. Corp., Sound Beach, Conn.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Economy—See Rockford Lathe & Drill Co.
 Fay—See Jones & Lamson Machine Co.
 Fay & Scott, Dexter, Me.
 Fay Machine Tool Co., Philadelphia, Pa.
 Filsmith—See Smith Mfg. Co.
 Fitchburg Machine Works, 64 Main St., Fitchburg, Mass. "Lo-swing."
 Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Greaves-Klusman Tool Co., Cincinnati, O.
 Hamilton Machine Tool Co., Hamilton, O.
 Hendey Machine Co., 105 Summer St., Torrington, Conn.
 Jones & Lamson Machine Co., Springfield, Vt. "Fay."
 Landis—See Boggs Co.
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Lo-swing—See Fitchburg Machine Works.
 Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.
 Monarch Machine Tool Co., 102 Oak St., Sidney, O.
 Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
 Mueller Machine Tool Co., 2425-29 Colerain Ave., Cincinnati, O.
 Mulliner—See Porter-Cable Machine Co.
 Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.

National Lathe Co., 11-15 W. Second St., Cincinnati, O.
 New Haven Mfg. Co., 50 Whitney Ave., New Haven, Conn.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."
 Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
 Pond—See Niles-Bement-Pond Co.
 Porter-Cable Machine Co., 1703 N. Salina St., Syracuse, N. Y. "Mulliner."
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Putnam Machine Co., Newton Pl., Fitchburg, Mass.
 Rahn-Larmon Co., 2941 Spring Grove Ave., Cincinnati, O.
 Reed-Prentice Co., 53 Franklin St., Boston, Mass.
 Robbins Machine Co., 42 Lagrange St., Worcester, Mass.
 Rockford Lathe & Drill Co., 1827 14th Ave., Rockford, Ill. "Economy."
 Rockford Tool Co., 2410 11th St., Rockford, Ill.
 Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Sebastian Lathe Co., Cincinnati, O.
 Seneca Falls Mfg. Co., 387 Falls St., Seneca Falls, N. Y. "Star."
 Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Smith Mfg. Co., Philip, Sidney, O. "Filsmith."
 South Bend Lathe Works, 600 E. Madison St., South Bend, Ind. (See page 563.)
 Springfield Machine Tool Co., Southern Ave. & F. C. & St. L. R. R., Springfield, O.
 Stapf & Co., John B., Dunkirk, N. Y.
 Star—See Seneca Falls Mfg. Co.
 Walcott Lathe Co., 111-13 Calhoun St., Jackson, Mich.
 Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.
 Wickes Bros., 2501 Water St., Saginaw, Mich.
 Willard Machine & Tool Co., Third St. & Madison Ave., Cincinnati, O.

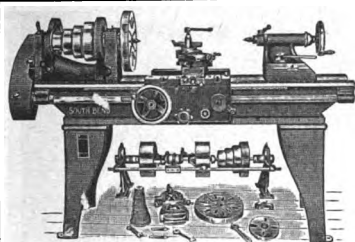
LATHES, Forming

Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.

LATHES, PATTERN MAKERS — See Lathes, Woodworking**LATHES, PRECISION—See Lathes, Bench or Precision****LATHES, PROPELLER TURNING—See Lathes, Aircraft Propeller Turning****LATHES, STRUT—See Lathes, Airplane Strut****LATHES, Turret**

Aome Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.
 American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
 American Tool & Machine Co., 10 High St., Boston, Mass.

Everything is listed under the NOUN or principal word



SOUTH BEND LATHES

FOR THE MACHINE AND AUTOMOBILE REPAIR SHOP
REDUCED PRICES

9"x3" Lathe.....	\$220.00
11"x4" Lathe.....	285.00
13"x5" Lathe.....	380.00
15"x6" Lathe.....	470.00
18"x8" Lathe.....	565.00

South Bend Lathes are also made in 18", 21" and 24" swing inclusive and in lengths from 2½ feet to 16 feet.

New 64-page catalog for 1921. Sent prepaid to any address. Send a postal today.

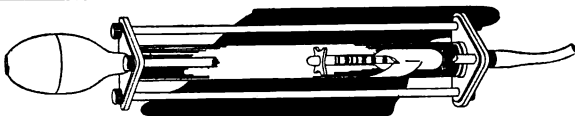
South Bend Lathes have been on the market 15 years.

SOUTH BEND LATHE WORKS

600 East Madison Street, South Bend, Indiana

How to Run a Lathe An 80-page book, postpaid, to any address for ten cents, silver or stamps accepted.

**DUR-
ABLE**



**SERVICE-
ABLE**

THE PERFECTION HYDROMETER SYRINGE

PATENT PENDING

This instrument is made of the best non-conductive material. The glass is a high-test steam tubing with an eighth inch wall, is protected by hard rubber rods one-quarter inch thick to prevent the glass from breaking in case tools are laid on it, which has very often been the case. It is triangular in shape and will not roll. Positively air tight. Will outwear any other hydrometer on the market. Invented by W. E. Biebow, who has had fifteen years of battery experience.

THE PERFECTION HYDROMETER COMPANY

742 Turner Street

Los Angeles, Cal.



"SUPER" HYDRAULIC JACKS

A 6-TON TRUCK JACK
also
A 2-TON AUTO JACK

1. No Worms to Strain
2. No Ratchets to Break
3. No Gears to Strip
4. No Jacking Down

See Your Dealer

If He Is All Out, Write Us

BEACON BRONZE COMPANY

MAKERS OF

"Boronite," a first class bearing bronze equal to any, but cheap in price. Write for our prices on standard bars and finished bearings.

"TOLONITE" Nos. 1 and 2

No. 1 is a high tensile strength aluminum. No. 2 is a high pressure aluminum. Tolonite is cheaper than common aluminum and is 50% more efficient.

Write us for Prices

BEACON, NEW YORK



Rear View

Patent Pending

Neverout

MIRROR AND PARKING LIGHT

Saves the Battery

Shows red light in rear and white light in front. Scientifically ground reducing mirror—beveled. Operated by "on and off" switch or from dash. Fits any fender.

Makers of the Celebrated Neverout Lamps

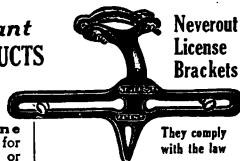
ROSE MANUFACTURING COMPANY, PHILADELPHIA, PA.

Other Important NEVEROUT PRODUCTS

NEVEROUT Electric Parking Light, for fender, without mirror.

NEVEROUT Kerosene Auto Parking Light, for attaching to windshield or fender.

NEVEROUT Electric Tail Lamps. Also combined with license bracket. Adjustable for either right or left side.



Neverout License Brackets

They comply with the law

Style No. 9 Front Bracket attaches direct to water filler tube. No stock is complete without Neverout Brackets. Write for illustrations to fit all cars.

Please mention The Automobile Trade Directory

LATHES, Turret (Continued)

Bardons & Oliver, 1138 W. Ninth St., Cleveland, O.
 Bradford Machine Tool Co., 657 Evans St., Cincinnati, O.
 Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn.
 Champion Tool Works, 4955 Spring Grove Ave., Cincinnati, O.
 Conradson Machine Tool Co.—See Ryerson & Son.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Drees Machine Tool Co., 227-39 W. McMicken Ave., Cincinnati, O.
 Fay & Scott, Dexter, Me.
 Federal Machine Co., 1602-18 S. Lafayette St., South Bend, Ind.
 Fulton Machine Tool Co., 1422 Fulton St., Chicago, Ill.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 915.)
 Greenlee Bros. & Co., 2100-2400 12th St., Rockford, Ill.
 Hamilton Machine Tool Co., Hamilton, O.
 Hartness—See Jones & Lamson Machine Co.
 Inman Co., H. A., Newark, N. Y.
 International Machine Tool Co., 1124 W. 21st St., Indianapolis, Ind. "Libby."
 Jones & Lamson Machine Co., Springfield, Vt. "Hartness."
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Libby—See International Machine Tool Co.
 Lodge & Shipley Machine Tool Co., 3055 Coleman Ave., Cincinnati, O.
 Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.
 Millholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.
 Monarch Machine Tool Co., 102 Oak St., Sidney, O.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Rahn-Larmon Co., 2941 Spring Grove Ave., Cincinnati, O.
 Reed-Prentice Co., 53 Franklin St., Boston, Mass.
 Rivett Lathe & Grinder Co., 20 Riverview Rd., (Brighton), Boston, Mass.
 Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Smurr & Kamen Co., 328 N. Albany Ave., Chicago, Ill.
 Southworth Machine Co., Portland, Me.
 Steidle Turret Machine Co., Madison, Wis. (See page 585.)
 Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.
 Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

LATHES, Woodworking

American Saw Mill Machinery Co., Hackettstown, N. J.
 American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
 Defiance Machine Works, 434 Perry St., Defiance, O.
 Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.
 Fay & Scott, Dexter, Me.
 Ober Mfg. Co., Chagrin Falls, O.
 Oliver Machinery Co., 1035 Clancy St. N. E., Grand Rapids, Mich.
 Porter Machinery Co., C. O., 606 Front Ave. N. W., Grand Rapids, Mich.
 Power & Co., L., 20 S. 23d St., Philadelphia, Pa.
 Robbins Machine Co., 42 Lagrange St., Worcester, Mass.
 Smith Machine Co., H. B., Smithville, N. J.

LEAD BURNERS—See Burners, Lead

LEAD BURNING MACHINES—See Machines, Lead Burning

LEAD MOLDS—See Molds, Lead

LEAF SPRING STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening

LEAF SPRINGS—See Springs, Leaf

LEATHER, Artificial or Imitation

(For upholstery and tops; for genuine leather—See Leather, Natural)

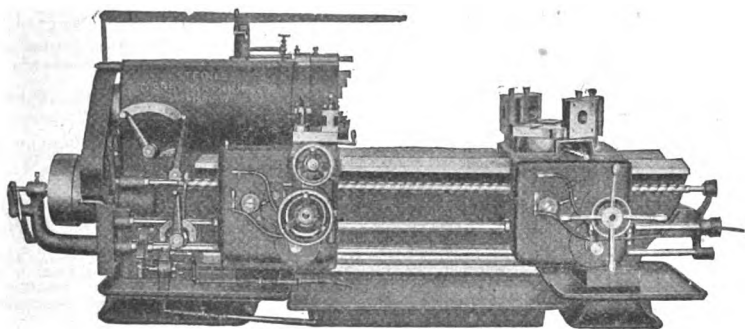
Ashtabula Hide & Leather Co., Ashtabula, O.
 Athol Mfg. Co., Athol, Mass. "Atholeather." (See page 567.)
 Atholeather—See Athol Mfg. Co.
 Barrell Co. of New York, Wm. L., 50 Leonard St., New York, N. Y. "Wilbaco."
 Blue Robin—See Lawrence & Co.
 Boston Woven Hose & Rubber Co., Cambridge, Mass. "Synthide."
 Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. "Topsemail." (See page 105.)
 Broncho—See Zapon Leather Cloth Co.
 Buco—See Burgin & Co.
 Bull Dog—See Muttly Co.
 Burgin & Co., 487 Broadway, New York, N. Y. "Buco."
 Charoleen—See Reilly & Son.
 Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Leatherwove."
 Chicago Decorative Leather Co., 426 S. Clinton St., Chicago, Ill. "Elkide."
 Conneaut Leather Co., Commerce St., Conneaut, O.
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Ima-Hide."
 Cotex Co., 331-59 Oliver St., Newark, N. J.
 Driedek—See Muttly Co.
 Duncan Co., W. H., 70-72 Worth St., New York, N. Y.
 du Pont de Nemours & Co., E. I. (Fabrikoid Div.), Wilmington, Del. "Fabrikoid," "Rayntite." (See page 225.)
 Duralather—See Masland Duralather Co.
 Duratex Co., Newark, N. J.
 Duxrane—See O'Bannon Corp.
 Elkide—See Chicago Decorative Leather Co.
 Edystone Fabric Co., Wm. W., 51 Charlestown St., Cambridge, Mass. (Dealers.) (See page 567.)

Everything is listed under the NOUN or principal word

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Originators of the Heavy Duty Full Swing
Side Carriage Turret Lathe



"Standard 24" Steinle Full Swing Side Carriage Turret Lathe with 4" Hole Through Spindle and Equipped with Oil Pans, Pump and Piping for Direct Belt Drive."

The machine shown above is the superior of any heavy duty turret lathe on the market as a general purpose machine. It has exclusive features that are invaluable and permit of better tooling arrangements than can be applied to any other machine of this character, thereby greatly increasing efficiency in point of quality and quantity of production.

This machine will turn out exceptionally accurate duplicate or interchangeable parts at a very low production cost.

Interchangeable parts mean low assembling cost, high quality product, and good repair parts service.

The Steinle 24" Full Swing Side Carriage Turret Lathe is accomplishing these results for many tractor, truck, and gas engine manufacturers.

Send us drawings of your work and let our Engineering Department tell what this machine can do for you.

Illustrative and descriptive folders, list of prominent users and full information on request.

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

Please mention The Automobile Trade Directory

LEATHER, Artificial or Imitation (Continued)

Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa. "Enduralite."
 Enduralite—See Endura Mfg. Co.
 Fabrikoid—See du Pont de Nemours & Co.
 Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Ima-Hide—See Chicago Rawhide Mfg. Co.
 Keratol Co., South & Van Buren Sts., Newark, N. J.
 Lawrence & Co., 24 Thomas St., New York, N. Y. (Sole Distributors for Merrimack Mfg. Co., Lowell, Mass.) "Blue Robin."
 Leatherlike Co., Oakman Blvd. & Detroit Terminal R.R., Detroit, Mich.
 Leatherwove—See Chase & Co.
 Masland Dural Leather Co., Collins St. & Allegheny Ave., Philadelphia, Pa. "Dural Leather." (See page 567.)
 Merrimack Mfg. Co.—See Lawrence & Co.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.)
 (See page 271.)
 Moroccoline—See Zapon Leather Cloth Co.
 Muleskin—See Zapon Leather Cloth Co.
 Mustang—See Zapon Leather Cloth Co.
 Mutty Co., L. J., Boston, Mass. "Bull Dog," "Dridek." (See page 1005.)
 Newark Rubber Co., Schley St., Garfield, N. J.
 Nonleek—See O'Bannon Corp.
 O'Bannon Corp., 200 Fifth Ave., New York, N. Y. "Nonleek," "Duxrane." (See page 255.)
 Pantasote Co., 11 Broadway, New York, N. Y. "Textasote."
 Pinto—See Zapon Leather Cloth Co.
 Pyroxoline—See Athol Mfg. Co.
 Randco—See Zapon Leather Cloth Co.
 Rayntite—See du Pont de Nemours & Co.
 Relly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Charoleen."
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Seamans & Cobb Co., Boston, Mass. (See page 514.)
 Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)
 Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal.
 Synthide—See Boston Woven Hose & Rubber Co.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Textasote—See Pantasote Co.
 Textileather Co., 1819 Broadway, New York, N. Y.
 Wilbaco—See Barrell Co. of New York.
 Zapon Leather Cloth Co., 200 Fifth Ave., New York, N. Y. "Moroccoline," "Broncho," "Muleskin," "Randco," "Mustang," "Pinto." (See page 299.)

LEATHER BELTING—See Belting, Leather

LEATHER COATS—See Clothing, Motorists'

LEATHER DOOR PROTECTORS — See Protectors, Door

LEATHER DRESSING — See Dressing, Leather

LEATHER FAN BELTS—See Belts

LEATHER, Friction

(For Using brakes and clutches—See also Belting, Leather)

Automotive Leather Products Co., Park Ave. & 130th St., New York, N. Y.
 Boston Leather Specialties, 30 Merrimack St., Boston, Mass.
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
 Coe & Brown, 204 George St., New Haven, Conn.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Detroit Clutch Cover Co., 17 Woodward Ave., Detroit, Mich.
 Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 905.)
 Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G. & K." Leather.) (See page 115.)
 Excelmo—See Missouri Belting Co.
 G. & K.—See Graton & Knight Mfg. Co.
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Leathertex." (See page 119.)
 Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Vim."
 Hudson Belting Co., 1-8 Eaton Pl., Worcester, Mass.
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)
 Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
 Leathertex—See Hide, Leather & Belting Co.
 M. L. B.—See Milwaukee Leather Belting Co.
 Milwaukee Leather Belting Co., 146 W. Water St., Milwaukee, Wis. "M. L. B."
 Missouri Belting Co., 1021-39 S. Grand Ave., St. Louis, Mo. "Excelmo."
 National Leather Belt Co., 343 E. 38th St., New York, N. Y.
 National Leather Co., 161 South St., Boston, Mass.
 Page Belting Co., Concord, N. H.
 Providence Belting Co., 25 Charles St., Providence, R. I.
 Rahmann & Co., Geo., 81 Spruce St., New York, N. Y.
 Ranville Co., F., 241-49 Pearl St., Grand Rapids, Mich.
 Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)
 Schleren Co., Chas. A., 76 Ferry St., New York, N. Y.
 Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.
 Vim—See Houghton & Co.
 Wetprufe—See Hide, Leather & Belting Co.
 Wilder & Co., 1036 Crosby St., Chicago, Ill.
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

LEATHER, IMITATION—See Leather, Artificial

LEATHER MATS—See Mats, Leather

LEATHER MEASURING MACHINES—See Machines, Leather Measuring

Everything is listed under the NOUN or principal word

Atholeather

ATHOL MANUFACTURING CO.

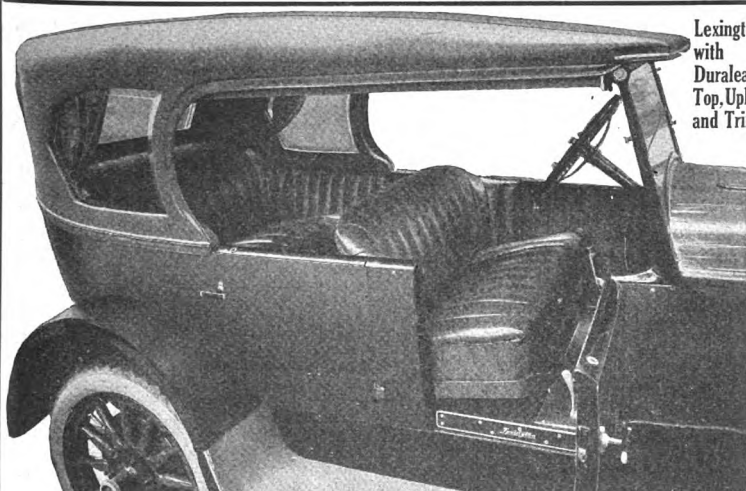
ATHOL, MASS.

MARYSVILLE, MICH.

NEW YORK—DETROIT—CHICAGO—LONDON

Athol Top Material

(Write for Samples)



Lexington Car
with
Duraleather
Top, Upholstery
and Trim

There is a Correct Quality for CALIFORNIA TOPS, UPHOLSTERY, TRIM and BINDINGS IN

Duraleather The Durable
Leather Substitute

THE MASLAND DURALEATHER CO., Mfrs. Collins Street and Allegheny Avenue PHILADELPHIA

Attention Automobile Manufacturers

OUR business is to furnish Automobile Manufacturers with all kinds of Ducks, Drills, Sheetings, Bow Drills, Osnaburgs in Remnants, Seconds, Shorts and Regulars. Suitable for Cushion Seat Foundations, Backs and Springs. Write us for samples and quotations. State materials you want.

Wm. W. Edelstone Fabric Company

51 Chardon Street

Boston, 14, Mass.

Please mention The Automobile Trade Directory

LEATHER MOULDING—See Moulding,
Flexible Leather

LEATHER MUD GUARDS—See Fenders,

LEATHER, Natural

(Genuine Leather for upholstery and tops; for Artificial or Imitation Leather—See Leather, Artificial)

American Leather Mfg. Co., New & Nuttmann Sts., Newark, N. J. "Stag."
American Oak Leather Co., Kenner St., Cincinnati, O.
Arrow—See Ryan Leather Co.
Ashtabula Hide & Leather Co., Ashtabula, O.
Beaver—See Straus & Sons Corp., M.
Black Bear—See Radel Leather Mfg. Co.
Blanchard Bro. & Lane, 20 Bruen St., Newark, N. J.
Boule-Frazier Leather Co., 232 Canal St., New York, N. Y.
Byron & Sons Leather Co., W. D., Williamsport, Md. "Tanok," "Eureka."
Cleveland Tanning Co., Jennings & Dennison Aves., S. W., Cleveland, O.
Conneaut Leather Co., Commerce St., Conneaut, O.
Eagle—See Reilly Co.
Eagle-Ottawa Leather Co., Grand Haven, Mich. (See page 569.)
Eureka—See Byron & Sons Leather Co.
General Leather Co., 418 Frelinghuysen Ave., Newark, N. J.
Good, I. C. & H. R., Newark, N. J.
Hertz Leather Co., Max, 64-68 Oliver St., Newark, N. J.
Howell & Co., T. T., New & Nuttmann Sts., Newark, N. J. "Lion."
Howell-Hinchman Co., Middletown, N. Y.
Lack-a-Tan—See Lackawanna Leather Co.
Lackawanna Leather Co., Hackettstown, N. J. "Lack-a-Tan."
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Lion—See Howell & Co.
Ments, John J., 64 Marshall St., Newark, N. J.
Pearce Bros. Leather Co., Newark, N. J.
Radel Leather Mfg. Co., Hamburg Place Rd., Newark, N. J. "Black Bear."
Raser Tanning Co., Ashtabula, O.
Reilly Co., John, 40 Ave. C., Newark, N. J. "Eagle."
Reilly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Stag."
Roser & Son., Hermann, Glastonbury, Conn.
Ryan Leather Co., Woolsey St., Irvington, N. J. "Arrow."
Shields Bros., Bombay, N. Y.
Smith & Sons, L. M., 15-17 Lock St., Newark, N. J.
Smyth Co., Charles, 240-50 Central Ave., Newark, N. J.
Stag—See American Leather Mfg. Co.
Stag—See Reilly & Son.
Standard Leather Co. of Pittsburgh, 296 Spring Garden Ave., N. S., Pittsburgh, Pa.
Stengel, Geo., 49 Western Ave., Newark, N. J.
Stengel & Rothschild, Maine & Kossuth Sts., Newark, N. J.
Straus & Sons Corp., M., 506 Frelinghuysen Ave., Newark, N. J. "Beaver."
Tanok—See Byron & Sons Leather Co.
Wildor & Co., 1036 Crosby St., Chicago, Ill.

Wildor Tanning Co., Waukegan, Ill.
Wing Co., Charles, Amesbury, Mass. (Dealers.) (See page 873.)

LEATHER, Rawhide Lace

(For presenting motor hoods or bonnets from rattling; for Fabric Lace—See Lacing, Fabric)

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
Cochecho—See Williams & Son.
Defiance—See Norwich Belt Mfg. Co.
Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)
Eagle—See Mooney Belting Co.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Leather.) (See page 115.)
G. & K.—See Graton & Knight Mfg. Co.
Gay, Fred E., Olneyville, R. I.
General Tanning Corp., Chester, Mt. Vernon & Melborn Aves., Irvington, N. J.
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."
Hide Leather & Belting Co., 223 S. Meridian St., Indianapolis, Ind. (See page 119.)
Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)
Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Victor."
Mooney Belting Co., 844 W. Sixth St., Cincinnati, O. "Eagle."
National Leather Co., 161 South St., Boston, Mass.
National Leather Belt Co., 342 E. 38th St., New York, N. Y.
Norwich Belt Mfg. Co., N. Main St., Norwich, Conn. "Defiance."
Rahmann & Co., Geo., 31 Spruce St., New York, N. Y.
Victor—See Missouri Belting Co.
Weatherhead-Thompson Co., Pawtucket, R. I.
Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Cochecho."

LEATHER STRAPS—See Straps, Leather

LEATHER TOPS—See Tops, Automobile

LEATHER TUFTING WASHERS—See Washers, Tufting

LEATHER, UPHOLSTERY—See Leather, Artificial; also Leather, Natural

LEATHER WASHERS—See Washers, LEATHER

LEGGINGS, Motorists

Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. "Reliance," "Napoleon," "Tocinone," "Universal," "Boulevard," "Harvard," "National." (See page 307.)
B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Everything is listed under the NOUN or principal word

Eagle-Ottawa Leather Company

LARGEST TANNERS OF AUTOMOBILE LEATHER IN THE WORLD.

Strap leather in grain and split for all purposes.

CORRESPONDENCE SOLICITED

CHICAGO, ILL.
226 West Lake Street

GRAND HAVEN
Michigan

NEW YORK, N. Y.
74 Gold Street



Price
\$200

\$300

Porter
Easy
Gasoline
Control
for
Ford Cars

Installed
Easily in
A Few
Minutes

in Canada

Complete

THINK WHAT THIS MEANS

Gives maximum power and efficiency to your motor by allowing for the correct adjustment of gasoline mixture instantly to meet changing driving conditions.

Keep Your Mixture as Lean as Possible

WE HAVE AN ATTRACTIVE PROPOSITION FOR SALES REPRESENTATIVES

Manufactured by

PORTER PRODUCTS CORPORATION

General Offices:

670 Keith Building

Syracuse, N. Y.

MONOGRAMS for AUTOMOBILES

Dr. B. M.

GRACE

J. W. L.

G. W. C.

R. S. E.



Automobile owners like monograms on their cars; they give a distinctive appearance of character and individuality, afford protection against theft and make the marked car easily recognized among others of the same make.

Our Transfer Monograms last as long as the finish of the car. They are perfect and original in design, come in red, gold, white, blue and combinations of these colors and anyone following instructions may apply them.

Body works and paint shops all over the country use them profitably in preference to the hand-painted monograms, because they are beautiful enough to create comment and inquiries wherever they are seen.

Write for our catalog showing designs in full colors and giving instructions as to use.

MOTORISTS' ACCESSORIES COMPANY
Mansfield, Ohio

The Atlas Tire Lock and Towing Lines

Lock made of Galvanized Steel Rope 36 inches long, covered with Black Imitation Leather, cannot be cut with nippers. Towing Lines made from high grade steel rope 25 ft. long, with patented fittings.

Send for prices

FISCHER & HAYES ROPE & STEEL CO.

741-745 W. Van Buren St., Chicago

Manufacturers

BRAKE CABLES—CUT OUT CORD—WIRE SASH CORD

Please mention The Automobile Trade Directory

LEGGINGS, Motorists (Continued)

Bantlin Co., Julius J., Cincinnati, O.
 Bemco—See B. E. Mfg. Co.
 Boulevard—See Atlas Specialty Mfg. Co.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Colt-Cromwell Co., 813 Broadway, New York, N. Y.
 Hagerstown Shoe & Legging Co., Hagerstown, Md. "Halo."
 Halo—See Hagerstown Shoe & Legging Co.
 Harvard—See Atlas Specialty Mfg. Co.
 Napoleon—See Atlas Specialty Mfg. Co.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 National—See Atlas Specialty Mfg. Co.
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Reliance—See Atlas Specialty Mfg. Co.
 Segco—See Syracuse & Eldridge Glove & Legging Co.
 Summers Mfg. Co., 746 S. Los Angeles St., Los Angeles, Cal.
 Syracuse & Eldridge Glove & Legging Co., 1108 Spring St., Syracuse, N. Y. "Segco."
 Toolnone—See Atlas Specialty Mfg. Co.
 Universal—See Atlas Specialty Mfg. Co.
 Wiley-Bickford-Sweet Co., 80 Pliny St., Hartford, Conn.

LENSES, DEFLECTING—See Dimmers, Headlight

LENSES, DIFFUSING—See Dimmers, Headlight

LENSES, DIMMING—See Dimmers, Headlight

LENSES, GASKET—See Gaskets, Headlight Lenses

LENSES, ORDINARY LAMP—See Glasses, Lamp

LENSES, SPECIAL—See Dimmers, Headlight

LETTERS, STEEL—See Stamps, Steel

LEVER BALLS—See Balls, Composition Control Lever

LEVER ENGINE STARTERS—See Starters, Manual

LEVER EXTENSIONS—See Extensions, Gear Shift Lever

LEVER GRIPS—See Grips, Throttle and Spark

LEVER LOCKS, EMERGENCY GEAR, FOR FORDS—See Locks, Emergency Gear Lever

LEVER LOCKS FOR FORDS—See Locks, Spark and Throttle Lever

LEVER STARTERS—See Starters, Manual

LEVERS, Brake and Gear Shift

(Finished or Machined Levers. For Levers in the rough—See Castings; also Forgings)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 Baker Gun & Forging Co., Batavia, N. Y. (See page 605.)
 Brewer Tiehener Corp., Cortland, N. Y. (See page 573.)
 Brown-Lipe Gear Co., Syracuse, N. Y. (See page 455.)
 Cotta Transmission Co., 2340 11th St., Rockford, Ill.
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Hazard Motor Mfg. Co., 23 Scherer St., Rochester, N. Y.
 Konigsloew Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.
 S. A. Machine Co., 2114 E. Woodridge St., Detroit, Mich.
 Warner Gear Co., Muncie, Ind. (See page 447.)

LEVERS, CONTROL—See Levers, Brake and Gear Shift

LEVERS, GEAR SHIFT—See Levers, Brake

LICENSE HOLDERS—See Holders, License

LICENSE NUMBERS—See Numbers, License

LIFE PRESERVERS, AVIATORS—See Preservers, Aviators' Life

LIFTERS, STORAGE BATTERY—See Carriers, Storage Battery

LIFTERS, TIRE—See Tools, Tire

LIFTERS, VALVE—See Rods, Adjustable Valve Lift; also Tools, Valve

LIFTING JACKS—See Jacks, Lifting

LIGHT DEFLECTORS—See Dimmers or Shades, Headlight

LIGHT FUSES—See Fuses, Electric

LIGHT REGULATORS FOR FORDS—See Regulators, Electric Light

LIGHT STANDS—See Lights, Wash Stand

LIGHT SWITCHES—See Switches, Light

LIGHTERS, Acetylene Lamp

(See also Burners, Special Acetylene Lamps)
 Adjustable Lighter Co., 18 Pearl St., Newton, Mass.
 Feaser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."
 Superior—See Feaser Co.

LIGHTERS, CIGAR—See Lighters, Electric Cigar

Everything is listed under the NOUN or principal word

W

E&M

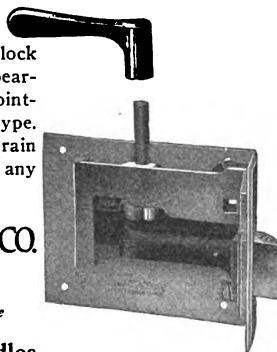
W

ENGLISH & MERSICK,

Rotary Lever Lock

A single, easy motion—a quarter turn of the handle—both unlocks and opens the door.

The Rotary Lever Lock is the one lock that harmonizes in operation and appearance with the refinements and appointments of motor cars of the better type. Simple to install. It is dust, dirt and rain proof, and adds real selling value to any car.



The ENGLISH & MERSICK CO.
New Haven, Conn.

Since 1860 makers of fine body hardware

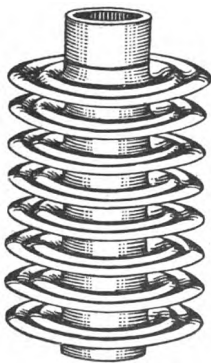
Locks

Hinges

Handles

E&M

E&M



THE RADIATOR FOR TRUCKS

A cooling section of the type here shown makes for improved radiation and greater convenience.

Collar on fin insures complete metallic union with tube, and holds fin securely in place. Tube driven through fin, giving the closest possible fit. Damaged fins may easily be restored to shape and usefulness without being loosened from tube.

Two supply sources, insuring delivery and interchangeable product. Your drawings will receive prompt attention.

AFFILIATED

The English & Mersick Co.
Radiator Dept.
New Haven, Connecticut

The Wheeler Radiator & Mfg. Co.
1637-39 Collamer Avenue
E. Cleveland, Ohio

W

E&M

W

Please mention The Automobile Trade Directory

LIGHTERS, Electric Cigar*(For use on car from regular lighting battery)*

Art Metal Works, Aronson Sq., Newark, N. J. "Ronson," "Paragon." (See page 495.)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lighters.) (See page 243.)

Auto-Spark-Lite—See McAdams Sales Co Century—See Mabeys Electric & Mfg. Co.

Cig-R-Lite—See Electric Automatic Cigar Lighter Co.

Cowles & Co., C., New Haven, Conn.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Electric Automatic Cigar Lighter Co., 556 W. 21st St., New York, N. Y. "Cig-R-Lite."

Genco—See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Gohring—See Taylor Co.

Handy—See Picard & Co.

Inter-State Sales Co., 56 Allen St., Rochester, N. Y. (Sole Distributors for Shur Products, Inc., Rochester, N. Y. "Shur Lite.")

McAdams Sales Co., J. C., 51 E. 42nd St., New York, N. Y. (Sole Distributors for Queensboro Tool & Die Co., Long Island City, N. Y. "Auto-Spark-Lite.") (See page 557.)

Mabeys Electric & Mfg. Co., 988 Ft. Wayne Ave., Indianapolis, Ind. "Century."

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)

Morse, Frank W., 239 Congress St., Boston, Mass. (See page 79.)

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Paragon—See Art Metal Works.

Picard & Co., A. J., 9 W. 61st St., New York, N. Y. "Handy."

Presto—See Metal Specialties Mfg. Co.

Queensboro Tool & Die Co.—See McAdams Sales Co.

Ronson—See Art Metal Works.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

Seco—See Spielman Electric Co.

Shur-Lite—See Inter-State Sales Co.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."

LIGHTERS, Electric Cigar, for Fords*(For use in car and to operate on current from magneto)*

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lighters.) (See page 243.)

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)

Presto—See Metal Specialties Mfg. Co.

LIGHTING BATTERIES—See Batteries, Storage

LIGHTING DYNAMOS—See Generators, Electric Lighting

LIGHTING GENERATORS—See Generators, Electric Lighting

LIGHTING PLANTS—See Plants, Farm Lighting

LIGHTING SYSTEMS—See Systems, Electric Lighting

LIGHTS, Curtain*(For Glass Curtain Lights—See Windows, Glass Curtains)*

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto-Vehicle Parts Co.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Bemco—See B. E. Mfg. Co.

Brewer Tichener Corp., Cortland, N. Y. "Pioneer." (See page 573.)

Buob & Scheu, 500-10 Webster St., Cincinnati, O. "Pioneer." (See page 983.)

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Decker Mfg. Co., Lincoln Bldg., Detroit, Mich.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "E. Z. In." (See page 943.)

E. Z. In—See Ero Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

H & B—See Holmes & Bostrom Bros.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Holmes & Bostrom Bros., 365 17th Ave., Milwaukee, Wis. "H & B."

Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Lockwood Mfg. Co., Kansas City, Mo.

McAvoy Mfg. Co., 4535 Fullerton Ave., Chicago, Ill.

Mobile Top Co., 26 Selden Ave., Detroit, Mich.

Omaha Auto Top Co., 709-11 E. 15th St., Omaha, Neb. "Co-Zee."

Paragon—See Doerner & Co.

Pioneer—See Brewer Tichener Corp.

Pioneer—See Buob & Scheu.

Replace Light Mfg. Co., 2308 Sixth Ave., Rock Island, Ill.

Stik-Tite—See Cincinnati Auto Specialty Co.

Sure-Fit—See Hodes-Zink Mfg. Co.

Ten Elck, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

LIGHTS, Curtain, for Fords*(Celluloid light or window with fabric or leather binding and special fasteners for replacing damaged rear curtain lights)*

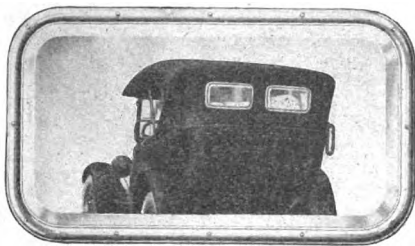
A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich. "Standard," "Gypsy."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."

Aristocrat—See Ero Mfg. Co.

Everything is listed under the NOUN or principal word

PIONEER CURTAIN LIGHTS



Make the Open Top
Beautiful

MANY SIZES

Rounds—Ovals—Rectangles

**SEND FOR ILLUSTRATED WALL
HANGER AND FOLDER TO**

Brewer Titchener Corp.
CORTLAND, N. Y.

"SEES ALL" MOTOR EYE "TELLS ALL"

THE MOTOR EYE takes the temperature directly from the water in the radiator—you do not have to wait for temperature indication until steam is up, as the slightest change in the temperature of the water is shown instantly in the thermometer of the MOTOR EYE.

The stem attached to the bottom of the MOTOR EYE extends down into the water, THAT houses and protects the delicate thermometer from injury.

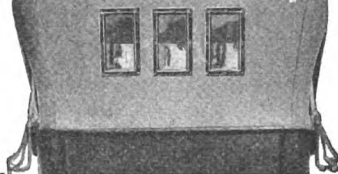
The Motor Eye can be furnished with special design name plates on back for all makes of cars, trucks and tractors.

Manufactured by

Metalware Corporation

228 W. Superior Street, Chicago, Ill.

HASTINGS Glass Rear Curtain Lights



A Big Seller for Fords

Gives the Ford a smart look. Protects from weather. Outwears celluloids many times. Will not tear or sag curtain. The glass fits present opening; metal sashes, one on each side, clamp tightly to reinforced edges of opening with eight screws.

Set of three.....	\$2.00
West of Rockies.....	2.25
In Canada.....	3.00

Ask Your Jobber or Write to Us for Catalog

Besides Curtain Lights the Hastings line of Ford Necessities consists of Tire Carriers, Expansion and Cradle type in single and double models for side or rear; Ford Heavy Duty Truck Tire Carriers; Bracket Side Carriers, single and double; Ford Stabilizers and patented-spring Bumpers.

HASTINGS MANUFACTURING CO.

36 Mill Street, Hastings, Michigan

New Double Action Grease Pump

Operates by forced-air pressure or hand. Accurate, visible measuring gets customer's confidence.

Operator can set pump to automatically dispense any exact quantity desired. Will handle 30 pounds of grease in one minute.

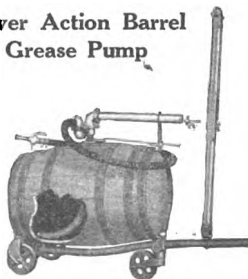
Ask about our new Triple Action. It cleans out old grease. Pumps in clean grease. Reloads itself. Also 12 other models. Largest line of its kind made.

Boe Mfg. Co., 941 E. Hennepin Ave., Minneapolis, Minn.

BOE Lever Action Barrel Grease Pump

Almost instantly makes any barrel a portable grease dispensing pump. Truck tongue serves as pump handle.

Exclusive, leak-proof, 10-ply pump-plunger construction and adjustable piston stroke insures absolutely correct measure.



Please mention The Automobile Trade Directory

LIGHTS, Curtain, for Fords (Continued)

- Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
- Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
- Auveco—See Auto-Vehicle Parts Co.
- Brewer Tichenor Corp., Cortland, N. Y. (See page 573.)
- Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
- Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."
- Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
- Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
- Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.
- Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "Aristocrat." (See page 543.)
- Ever-Clear—See Proos Mfg. Co.
- Fitzwell—See Niagara Fabric Mfg. Co.
- Genesee Mfg. Co., 616-18 Harrison St., Flint, Mich.
- Golden Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
- Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
- Gypsy—See A & E Auto Top Co.
- H & B—See Holmes & Bostrom Bros.
- Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 573.)
- Holmes & Bostrom Bros., 365 17th Ave., Milwaukee, Wis. "H & B."
- Limolite—See Monarch Auto Specialties Co.
- Lockwood Mfg. Co., Kansas City, Mo.
- Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
- Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill. "Limolite."
- Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
- Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
- Paragon—See Doerner & Co.
- Powers Mfg. Co., Waterloo, Ia. "Three-In-One." (See page 581.)
- Proos Mfg. Co., Grand Rapids, Mich. "Ever-Clear."
- Replace Light Mfg. Co., 2308 Sixth Ave., Rock Island, Ill.
- R-E—See Roose Mfg. Co.
- Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
- Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
- Standard—See A & E Auto Top Co.
- Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
- Stik-Tite—See Cincinnati Auto Specialty Co.
- 3-A-Co.—See American Automobile Accessories Co.
- Three-in-One—See Powers Mfg. Co.

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, Electric Dome

- Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.
- Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 495.)
- Campbell Co., A. S., 161 Prospect St. (E. Boston), Boston, Mass. "Cello."
- Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.
- Cello—See Campbell Co.
- Columbus Auto Brass Co., Columbus, O. (See page 477.)
- Cowles & Co., C., New Haven, Conn.
- Diamond H—See Hart Mfg. Co.
- English & Mersick Co., New Haven, Conn. (See page 571.)
- Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
- Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."
- Holophone Glass Co., 340 Madison Ave., New York, N. Y.
- Indiana Lamp Co.—See Zinke Co.
- Kilborn-Sauer Co., Post Road, Fairfield, Conn.
- Liberty Works, Egg Harbor City, N. J. (See page 555.)
- Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)
- Moswell Mfg. Co., 175 Grand St., New York, N. Y.
- Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
- O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
- Rosco—See Rosen & Co.
- Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
- Shepard Art Metal Co., Detroit, Mich. (See page 481.)
- Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
- Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
- Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
- White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
- Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 686.)

LIGHTS, Electric Flash

(Portable Flash or Pocket Lights or Lanterns)

- American Carbon & Battery Co., East St. Louis, Ill.
- American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
- Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lights.) (See page 243.)
- Bailey Co., W. J., Newark, N. J. "Midget."
- Burleigh, Geo. K., Pensacook, N. H. "Fire Fly."
- Delta Electric Co., 313-405 E. Fourth St., Marion, Ind.
- Diamond Electric Specialties Corp., 101-03 E. Orange Ave., Newark, N. J.
- Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.
- Eveready—See American Ever Ready Works of National Carbon Co.
- Federal Sign System, Lake & Desplaines Sta., Chicago, Ill.
- Fire Fly—See Burleigh, Geo. K.

Everything is listed under the NOUN or principal word

LIGHTS, Electric Flash (Continued)

Franco Electric Corp., 104 S. Fourth St., Brooklyn, N. Y.
 Grether Fire Equipment Co., 312-14 E. Second St., Dayton, O.
 Hipco—See Hipwell Mfg. Co.
 Hipwell Mfg. Co., 825-35 North Ave., Pittsburgh, Pa. "Hipco."
 Kwik-Lite—See Usona Mfg. Co.
 Metal Specialties Mfg. Co., 333-53 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 Midget—See Bailey Co.
 Novo Mfg. Co., 424 W. 23d St., New York, N. Y.
 O-U-Lyte—See Weder Co.
 Presto—See Metal Specialties Mfg. Co.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)
 Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.
 Usona Mfg. Co., 1 Hudson St., New York, N. Y. "Kwik Lite."
 Weder Co., 4545 Germantown Ave., Philadelphia, Pa. "O-U-Lyte."

LIGHTS, ELECTRIC GAGE—See Lamps, Electric Dash

LIGHTS, ELECTRIC HEAD—See Headlights, Electric

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, GAGE—See Lamps, Electric Dash

LIGHTS, HEAD—See Lamps, Acetylene; also Headlights, Electric

LIGHTS, Parking

(Special Electric or Oil Lamps for attachment to Wind Shield or Fender to be used instead of regular lamp equipment when car is parked.)

American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 557.)
 C-S—See Culver-Stearns Mfg. Co.
 Cowles & Co., C., New Haven, Conn.
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."
 General Machine & Specialty Co., 1705 W. Baltimore St., Baltimore, Md. "Groco."
 Groco—See General Machine & Specialty Co.
 Hadco—See Hadden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco." (See page 821.)
 K-D Lamp Co., Cincinnati, O. (See page 485.)
 Metal Spinning & Plating Co., 39 S. Charles St., Baltimore, Md. "Victory."
 Mirror Park-Lite Corp., 209 W. 17th St., New York, N. Y. "Park-Lite." (See page 655.)
 Park-Lite—See Mirror Park-Lite Corp.
 Perko—See Perkins Marine Lamp Corp.
 Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."
 Rosco—See Rosen & Co.
 Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 503.)

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 293.)

Taylor-Southard Co., 206 Wells St., Milwaukee, Wis.

Victory—See Metal Spinning & Plating Co.

Yankee—See American Auto Lamp Co.

LIGHTS, POCKET—See Lights, Electric Flash

LIGHTS, REEL—See Lamps, Electric Hand; also Lights, Spot

LIGHTS, Spot

(For attachment to Wind Shield)

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.
 American Auto Lamp Co., Union Hill, N. J. "Yankee." (See page 557.)
 Anderson Electric & Equipment Co., 154-60 Whiting St., Chicago, Ill. "Autoreel-ite." (See page 510.)
 Aristocrat—See Raydex Mfg. Co.
 Aut-O-eye—See Lipman Pump Works.
 Autoreel-ite—See Anderson Electric & Equipment Co.
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Beamolite—See Motor Specialties Co.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 557.)
 Cellbeam Mfg. Co., 344 W. 57th St., New York, N. Y.
 Cincinnati Lamp & Bracket Co., 312 W. Fourth St., Cincinnati, O.
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 De Luxe—See Zinke Co.
 Delight—See K-D Lamp Co.
 Delta Electric Co., 313-405 E. Fourth St., Marion, Ind.
 Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 243.)
 Fire Spot—See Kaufmann & Sons.
 Flexolight—See Trolley Supply Co.
 Fox—See Hardware Mfg. Co.
 Gillfillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal. "West-erner."
 Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash. "Fox," "Owl," "Tiger."
 Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
 Indiana Lamp Co.—See Zinke Co.
 K-D Lamp Co., Cincinnati, O. "Delight." (See page 485.)
 Kaufmann & Sons, Chas., 1623 E. First St., Santa Ana, Cal. "Silverbeam," "Fire Spot."
 Kay Bee Mfg. Co., 312 W. 35th St., Los Angeles, Cal.
 Kilbourn-Sauer Co., Post Road, Fairfield, Conn.

Everything is listed under the NOUN or principal word

LIGHTS, Spot (Continued)

L'Eclairer—See Superior Lamp Mfg. Co.
 Lipman Pump Works, 100 Shirland Ave.,
 Beloit, Wis. "Aut-O-Eye."
 Michigan Auto Products Co., 2008 Grand
 River Ave., Detroit, Mich.
 Motor Specialties Co., Waltham, Mass.
 "Beamolite."
 Owl—See Hardware Mfg. Co.
 Parabolite—See Pittsburgh Electric Special-
 ties Co.
 Pittsburgh Electric Specialties Co., 396 Broad-
 way, New York, N. Y. "Parabolite."
 Pittsburgh Lamp, Brass & Glass Co., Liver-
 pool & River Sts., Pittsburgh, Pa. "Su-
 perior."
 Raydex Mfg. Co., Brackenridge, Pa. "Au-
 tocrat."
 Red Spot—See Wakefield Brass Co.
 Rerou—See Williams Mfg. Co.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway,
 New York, N. Y. "Rosco."
 (See page 313.)
 S & M Lamp Co., 117 W. 36th Pl., Los An-
 geles, Cal.
 Silverbeam—See Kaufmann & Sons, Chas.
 Standard Corp., Outlook Bldg., Columbus, O.
 Stewart-Warner Speedometer Corp., Chi-
 cago, Ill. (See page 1063.)
 Sunbeam Mfg. Co., Polson Bldg., Seattle,
 Wash.
 Superior—See Pittsburgh Lamp, Brass &
 Glass Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St.,
 New York, N. Y. "L'Eclairer."
 Tiger—See Hardware Mfg. Co.
 Trolley Supply Co., Canton, O. "Flexolight."
 Vesta Battery Corp., 2100 Indiana Ave., Chi-
 cago, Ill.
 Victor—See Corcoran Victor Co.
 Wakefield Brass Co., F. W., Vermilion, O.
 "Red Spot." (See page 355.)
 Westerner—See Gilfillan Bros. Smelting &
 Refining Co.
 Williams Mfg. Co., 125 W. 35th St., Los An-
 geles, Cal. "Rerou."
 Yankee—See American Auto Lamp Co.
 Zinke Co., 1323-25 Michigan Ave., Chi-
 cago, Ill. (Sales Department for Indi-
 ana Lamp Co., Connersville, Ind. "De-
 Luxe.") (See page 686.)

LIGHTS, Spot, for Fords

(For attachment to Wind Shield)

Cincinnati Lamp & Bracket Co., 312 W.
 Fourth St., Cincinnati, O.
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring
 Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Culver-Stearns Mfg. Co., 53 Grafton St.,
 Worcester, Mass.
 Delta Electric Co., Marion, Ind.
 Detroit Starter Co., 124 E. Larned St., De-
 troit, Mich. "Dynolite."
 Dynolite—See Detroit Starter Co.
 Faw Co., J. H., 27 Warren St., New York,
 N. Y. (Eastern and Southern Distribu-
 tors for Culver-Stearns Lamps.)
 (See page 243.)
 Fox—See Hardware Mfg. Co.
 Hardware Mfg. Co., 1410 Dearborn St., Seattle,
 Wash. "Owl," "Fox," "Tiger."
 Kay Bee Mfg. Co., 312 W. 35th St., Los An-
 geles, Cal.
 Owl—See Hardware Mfg. Co.

Standard Corp., Outlook Bldg., Columbus, O.
 Sunbeam Mfg. Co., Polson Bldg., Seattle,
 Wash.
 Tiger—See Hardware Mfg. Co.

**LIGHTS, TROUBLE—See Lamps, Electric
Hand; also Lights, Spot****LIGHTS, Wash Stand**

(For lighting car on wash stand)

Coffin Valve Co., Tolman St., Neponset, Mass.
 "Neponset."
 Muller, Edward, 5031 Hudson Blvd., West New
 York, N. J.
 Neponset—See Coffin Valve Co.
 Universal Electric Stage Lighting Co., 240 W.
 50th St., New York, N. Y.

LIMIT GAGES—See Gages, Limit**LIMOUSINE LIGHTS—See Lights, Electric
Dome****LIMOUSINE TELEPHONES—See Tele-
phones, Limousine****LIMOUSINE VENTILATORS—See Venti-
lators, Limousine and Fore-door****LIMOUSINE WATCHES—See Watches,
Limousine****LINED HOSE—See Hose, Metal Lined****LINEN, Airplane**

(See also Fabric, Aircraft)

Courtral Mfg. Co., 115 Franklin St., New
 York, N. Y.
 McBratney & Co., Robert, 121 Franklin St.,
 New York, N. Y.

LINING, Body or Frame(For use between body sill and steel frame to prevent
squeaking)

A-B-C—See American Brake-Lining Co.
 American Brake-Lining Co., Lansdale,
 Pa. "A-B-C." (See page 679.)
 American Mills Co., 39 W. 19th St., New
 York, N. Y. (See pages 579 and 580.)
 American Mills Co. of N. Y., 438 Broadway,
 New York, N. Y.
 Bond Co., Charles, 520 Arch St., Philadelphia,
 Pa. "Fabritax."
 Deco—See Dafos-Eustice Co.
 Dafos-Eustice Co., 4042 W. Jefferson Ave.,
 Detroit, Mich. "Deco," "Ustus."
 Detroit Leather Works, 863 E. Lafayette
 Blvd., Detroit, Mich. (See page 121.)
 Fabritax—See Bond Co.
 Felters Co., Millbury, Mass.
 (See page 465.)
 Flintkote Co., 88 Pearl St., Boston, Mass.
 "Rex."
 Gilmer Co., L. H., Philadelphia, Pa.
 (See page 117.)
 Hide Leather & Belting Co., 233 S. Meri-
 dian St., Indianapolis, Ind.
 (See page 119.)

Everything is listed under the NOUN or principal word

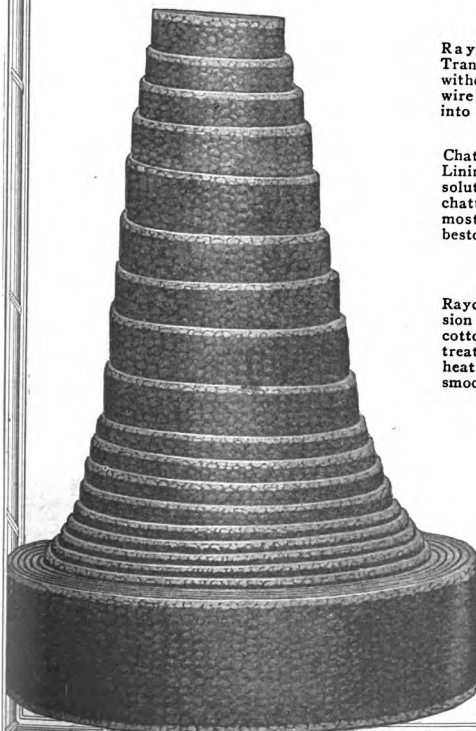
"and besides Raybestos"



Raybestos Molded Clutch Facing is displacing woven facings everywhere, because of better performance and longer life.



Raybestos Brakes are built to specifications. We have been brake specialists since the beginning of the industry.



Raybestos Lined Cold Rolled Steel Cam Brakes for Ford Cars are so made that the lined surface bears on the inside of the brake drum.



Royal External Emergency Brakes for Ford Cars are built on the same principles as Raybestos Brakes for larger cars and lined with Raybestos.



Raybestos Lined Internal Cam Brakes are specially constructed to replace the regular equipment.



Raybestos for Ford Transmissions is made without wire to prevent wire particles getting into the magneto.



Chatterless Transmission Lining for Ford Cars absolutely eliminates the chatter and wears almost as well as Raybestos.



Rayco Ford Transmission Lining is a woven cotton material that is treated to withstand heat and gives very smooth action.



Raybestos Oak Tanned Fan Belts for Ford Cars are lap stitched, one lap to the belt, two rows of lock stitching, waterproofed, cemented and dressed.

THE RAYBESTOS COMPANY

Factories:
Bridgeport, Connecticut
Peterborough, Ont., Canada

Branches:
Detroit, 4857 Woodward Avenue
Chicago, 1402 South Michigan Avenue
San Francisco, 1403 Chronicle Bldg.
Washington, D. C., 107 Columbian Bldg.

Please mention The Automobile Trade Directory

LINING, Body or Frame (Continued)

Horton Corp., F. L., 86 Whittier St., Roxbury, Mass. (See page 601.)
 Jaleau—See Uniform Hood Lace Co.
 Landers Bros. Co., Dept. A. 2, Toledo, O. (See page 1049.)
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Ruberite."
 Multibestos Co., Walpole, Mass. (See page 615.)
 National Felt Co., Easthampton, Mass.
 Powers Mfg. Co., Waterloo, Ia. (See page 581.)
 Rex—See Flintkote Co.
 Rochester Woven Belting Co., Commercial St., Rochester, N. Y. "Tuftex."
 Rubber-ite—See McElroy Belting & Hose Co.
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germanatown), Philadelphia, Pa. (See page 309.)
 Tuftex—See Rochester Woven Belting Co.
 Uniform Hood Lace Co., 1809 College Ave., Indianapolis, Ind. "Jaleau."
 Utus—See Dafos-Eustice Co.
 Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill.

LINING, Brake

(For lining brakes or clutches—See also Leather, Friction; also Belting, Leather; also Fibre, Hard)

A-B-C—See American Brake-Lining Co.
 Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill. "White Stripe."
 Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Brakebestos," "Bestallic." (See page 679.)
 Ajax—See Asbestos & Rubber Works of America.
 Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 679.)
 Ambesco—See American Asbestos Co.
 Ambler—See Keasbey & Mattison Co.
 American Asbestos Co., Norristown, Pa. "Ambesco." (See page 581.)
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 679.)
 American Mills Co., 39 W. 19th St., New York, N. Y. "Permanite." (See pages 579 and 580.)
 Anchor Packing Co., 73 Murray St., New York, N. Y. "Anchorite." (See page 679.)
 Anchorite—See Anchor Packing Co.
 Appleby & Co., T. H., 107 N. Franklin St., Syracuse, N. Y. "Trubestos."
 Arno—See Cincinnati Rubber Mfg. Co.
 Asbestite—See Majestic Auto Products Corp.
 Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Moto-Bestos." "Ajax." (See page 601.)
 Autobestos—See Keasbey & Mattison Co.
 Axwell Equipment Co., 214 Wood St., Pittsburgh, Pa.
 Bestallic—See Advance Packing & Supply Co.
 Bestbestos—See Federal Asbestos Co.
 Blue Edge—See Woven Steel Hose & Rubber Co.
 Brakebestos—See Advance Packing & Supply Co.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. "Arno." (See page 531.)
 Consolco—See Consolidated Packing Co.

Consolidated Packing & Supply Co., 21 Barclay St., New York, N. Y. "Consolco." (See page 461.)
 Curry Co., J. W., 2615 Cummins St., Cincinnati, O.
 Diamond N—See Norristown Magnesia & Asbestos Co.
 Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Griptite." (See page 583.)
 Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."
 Dural Rubber Corp., Maple Ave., Flemington, N. J.
 Durwyllan Co., Paterson, N. J. "Wirebestos."
 Dyrabestos—See United Asbestos & Packing Co.
 Elektra—See Horton Mfg. Co.
 Embestos—See Empire Rubber & Tire Co.
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J. "Embestos."
 Erbestos Brake Lining Co., 142 N. 17th St., Philadelphia, Pa.
 Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
 Ever Ready—See Kelso Mfg. Co.
 Federal Asbestos Co., 149 Hamburgh Ave., Paterson, N. J. "Bestbestos."
 Garco—See General Asbestos & Rubber Co.
 Gelsel Co., Otto E., 3200-05 Oxford St., Philadelphia, Pa. "Perfection."
 General Asbestos & Rubber Co., Charleston, S. C. "Garco." (See Back Cover.)
 Globestos—See United & Globe Rubber Co.
 Griptite—See Dominion Asbestos & Rubber Corp.
 Hartman Products Co.—See Monson, Chas. S.
 Horton Corp., F. L., 36 Whittier St., Roxbury, Mass. "Elektra." (See page 601.)
 J-M Non-Burn—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."
 K. H. K.—See Kay Co.
 Kay Co., Kay H., 957 Woodward Ave., Detroit, Mich. "K. H. K."
 Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler," "Autobestos."
 Kelso Mfg. Co., Trenton, N. J. "Ever-Ready." (See page 581.)
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Longwear—See Wearwell Gasket & Packing Co.
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Rubbestos."
 Majestic Auto Products Corp., 2 Columbus Circle, New York, N. Y. "Asbestite."
 Mikeall Brothers Company, 156 N. La Salle St., Chicago, Ill. "Superbestos." (See page 315.)
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Monson, Chas. S., Dime Bank Bldg., Detroit, Mich. (Sole Distributors for Hartman Products Co., Detroit, Mich.)
 Moto-Bestos—See Asbestos & Rubber Works of America.
 Multibestos Co., Walpole, Mass. (See page 615.)
 Norristown Magnesia & Asbestos Co., Norristown, Pa. "Diamond N."
 Perfection—See Gelsel Co.
 Permanite—See American Mills Co.
 Raybestos Co., Bridgeport, Conn. (See page 577.)
 Reliance—See Dugas-Hundley Corp.
 Rochester Woven Belting Co., Commercial St., Rochester, N. Y. "Tuftex."
 Rubbestos—See McElroy Belting & Hose Co.
 Rusco—See Russell Mfg. Co.

Everything is listed under the NOUN or principal word

STANDARD TRANSMISSION BAND LINING

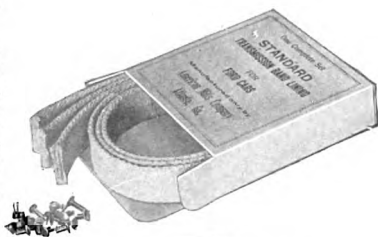
A standard of excellence which places this product of the American Mills Company in a class of its own.

It is woven tighter and consequently contains a much greater quantity of yarn than the ordinary lining. That is why Standard Transmission Band Lining is tougher and firmer and of greater density. Density absolutely governs the durability of a friction material.

Standard Transmission Band Lining is not treated with any chemical preparation, simply being stitched across each end to prevent unravelling. This is vitally necessary, while a chemical treatment does one or two things. It either makes the lining so hard that it causes chattering when the car is started, or it washes out when it becomes saturated with oil. In either case it accomplishes no good.

Standard Transmission Band Lining is furnished in strips cut to fit all models of the Ford car. Packed in two size cartons, one containing 100 sets (3 strips to a set) without rivets, and the other containing one set complete with rivets.

ONE SET COMPLETE



SEE NEXT PAGE
FOR LIST OF JOBBERS

Automotive Equipment Division
AMERICAN MILLS CO.
39 WEST 19th ST., NEW YORK

These Leading Jobbers

carry in stock

STANDARD TRANSMISSION BAND LINING

ALABAMA
Birmingham—Fulenwider Auto Supply Co.
United Auto Supply Co.

ARKANSAS
Fort Smith—Atkinson-Williams Hardware Co.
Texarkana—Turner Auto Sup. Co.

CALIFORNIA
San Diego—Western Auto Sup. Co.
San Francisco—W. E. & W. H. Jackson

COLORADO
Denver—Foster Auto Supply Co.

CONNECTICUT
Danbury—George A. Lewis Co.
Hartford—L. L. Ensworth & Son

DISTRICT OF COLUMBIA
Washington—Hines Auto Sup. Co.
Southern Auto Supply Co.

FLORIDA
Miami—Miami Tire Co.

GEORGIA
Dublin—Brandon Auto Supply Co.

ILLINOIS
Bloomington—E. B. Collins Co.
Champaign—Herrick Auto Sup. Co.

INDIANA
Indianapolis—The Gibson Co.
Universal Accessories Co.

IOWA
Cedar Rapids—Western Auto Specialty Co.
Clinton—Moessinger-Marquis Hardware Co.

KANSAS
Wichita—Auto Devices Co.
Auto Equipment Co.

KENTUCKY
Bowling Green—Davidson Bros.
Glasgow—Davidson Bros.

LOUISIANA
Louisville—George Dehler, Jr., Co.
Peaslee-Gaubert Co.

MAINE
Bangor—Hayes & Chalmers Co.

MASSACHUSETTS
Boston—George Collins & Co.
Malton Specialty Co.

MICHIGAN
Grand Rapids—Grand Rapids Auto Supply Co.
Tisch Auto Supply Co.

MINNESOTA
Minneapolis—McKay-Grubb Rubber Co.

MISSOURI
Joplin—Tri-State Auto Supply Co.
Kansas City—Bonniwell-Calvin Iron Company

NEBRASKA
North Platte—J. S. Davis & Co.
Omaha—J. H. Hanev & Sons

NEW JERSEY
Newark—Elin Auto Supply Co.
Standard Auto Supply Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

LOUISIANA
New Orleans—Stauffer-Eshleman Co., Ltd.

MAINE
Bangor—Hayes & Chalmers Co.

MASSACHUSETTS
Boston—George Collins & Co.
Malton Specialty Co.

MICHIGAN
Grand Rapids—Grand Rapids Auto Supply Co.
Tisch Auto Supply Co.

MINNESOTA
Minneapolis—McKay-Grubb Rubber Co.

MISSOURI
Joplin—Tri-State Auto Supply Co.
Kansas City—Bonniwell-Calvin Iron Company

NEBRASKA
North Platte—J. S. Davis & Co.
Omaha—J. H. Hanev & Sons

NEW JERSEY
Newark—Elin Auto Supply Co.
Standard Auto Supply Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

NEW YORK
Albany—Ailing Rubber Co.
Brooklyn—Oriental Rubber & S. Co.

OHIO
Chillicothe—Spetnagle Hdwe. Co.
Cincinnati—Julius J. Bantlin Co.
Cleveland—Gray Brothers
Columbus—H. G. Root Co.
Greenville—York Supply Co.
Dayton—Kenneth Motor Car Co.
Youngstown—Ohio Auto Supply Co.

OKLAHOMA
Oklahoma City—J. B. Burwell Supply Co.
Lyons Supply Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

PENNSYLVANIA
Allentown—F. Hersh Hdwe. Co.
Motor Accessory Co.

Automotive Equipment Division

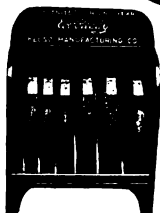
AMERICAN MILLS CO.

39 WEST 19th ST., NEW YORK

EverReady

SOLID WOVEN ASBESTOS BRAKE LINING

Transmission Lining for
Fords in sets and in rolls.
Are you getting your share
of this business?



SOLID WOVEN ASBESTOS CLUTCH FACING

Liberal discounts to the
trade.

An exclusive proposition
for the Distributor. Write
today, direct, or to the near-
est distributor.

KELSO MANUFACTURING CO., TRENTON, N. J.

DISTRIBUTORS:

Atlanta, Ga....23 W. Peachtree
St. Burton-Rogers Co.
Allentown, Pa..17 S. Seventh
St. Gehringer &
Baltimore, Md..614 W. North
Ave. American Sales Co.
Boston, Mass...755 Boylston St. Burton-Rogers Co.
Boston, Mass...280 Friend St. Motor Supply Co.
Buffalo, N. Y...1071 Main St. Federal Sales Co.
Buffalo, N. Y...730 Main St. Burton-Rogers Co.
Chicago, Ill....3104 S. Michi-
gan Blvd. Lining Sales Co.
Cleveland, Ohio..5200 Euclid Ave. Burton-Rogers Co.
Columbus, Ohio..146 E. Gay St. J. M. Baker Acces-
sory Co., The
Elmira, N. Y....424 E. Market
St. Motorparts Sales Co.
Houston, Texas..613 Washington
Ave. The Way Co.
Kans. City, Mo..1432 McGee St. Miles Piston Ring
Sales Co.

Milwaukee, Wis..205 2nd St. The Bearings Co.
Newark, N. J....971 Broad St. American Motor
Specialties Co.
N. Y. City, N. Y..117 W. 63rd St. D. F. Rose
Okla. C'y, Okla..306 W. First St. Mee-Oakes Co.
Omaha, Nebr....18th & Webster
St. Wilder-Miller Co.
Providence, R. I..10 Franklin St. Franklin Auto
Supply Co.
Philadelphia, Pa..805 No. Broad
Street Burton-Rogers Co.
Pittsburgh, Pa..Highland Bldg. Condon-Orne Bear-
ing & Supply Co.
Portland, Ore....570 E. Main St. Deitch & Co., Inc.
Reading, Pa....130 N. Ninth St. Kreider Mfg. & Dist.
San Francisco, Cal. Deitch & Co., Inc.
Syracuse, N. Y..610 Almond St. Motor Equipment
Co., The
Washington, D. C..511 11th St.
N. W. The Billingsley Co.

"THE PERFECT WEAVE—
CHEMICALLY TREATED"

Powers Norwegian Transmission Lining

FOR FORD CARS

THIS extra-quality lining is made
of selected long fibre cotton,
substantial yet pliable. A special
process and compound makes it re-
sist oil, grease, water, gasoline and
heat. Can be worn down to the
thickness of paper without raveling
or losing its grip.

Chatter, jerky, jumpy and uncer-
tain starting and stopping is com-
pletely eliminated and every stop is
smooth and silent.

Packed in a neat carton—three
pieces of proper length with rivets.
Also supplied in 100 foot rolls.

WRITE FOR CATALOGUE

POWERS MFG. COMPANY, Waterloo, Ia.

List Price

\$1.50

The
Powers
Line
Includes
Tire
Covers,
Fan
Belts,
Radiator
Covers,
Etc.



TESTBESTOS

AUTOMOBILE BRAKE LINING AND CLUTCH FACINGS



REASONABLY PRICED
SATISFACTION GUARANTEED

MANUFACTURED BY
AMERICAN ASBESTOS CO.
NORRISTOWN
PENNSYLVANIA, U. S. A.

Manufacturers of Asbestos Textiles Generally

Please mention The Automobile Trade Directory

LINING, Brake (Continued)

Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco."
(See page 121.)

S-M-C—See Staybestos Mfg. Co.

Scandinavia Belting Co., 106 Reade St., New York, N. Y.

Shepard Circular Fabric Co., 7-11 Summer St., Worcester, Mass.

Smith Belting Co., Manning J., 39 E. Ashmead St., Philadelphia, Pa.
(See page 309.)

Standard Brake Lining Co., Wilkins St., Hudson, Mass.

Staybestos Mfg. Co., 5534 Lena St. (German-town), Philadelphia, Pa. "S-M-C," "Universal."

Sterling Asbestos Co., 625 Decatur St., Brooklyn, N. Y.

Superbestos—See Mikasell Brothers Co.

Thermoid Rubber Co., Trenton, N. J.
(See page 551.)

Townsend Co., W. E., 137 W. 56th St., New York, N. Y. (Distributors.)
(See page 347.)

Trubestos—See Appleby & Co.

Tuftex—See Rochester Woven Belting Co.

United Asbestos & Packing Co., Chicago, Ill. "Dyrabestos."

United & Globe Rubber Co., Prospect & Frazier Sts., Trenton, N. J. "Globestos."

Universal—See Staybestos Mfg. Co.

Vort Mfg. Corp., 408 St. Paul St., Rochester, N. Y.

Wearwell Gasket & Packing Co., Camden, N. J. "Longwear."
(See page 583.)

White Stripe—See Advance Automobile Accessories Corp.

Wirebestos—See Durwyllan Co.

Woven Steel Hose & Rubber Co., Dale St., Trenton, N. J. "Blue Edge."

LINING, Brake, for Fords

(For lining brake bands and transmission bands.)

A-B-C—See American Brake-Lining Co.

Acme—See Appleby & Co.

Advance Automobile Accessories Corp., 1603 S. Michigan Blvd., Chicago, Ill. "White Stripe."

Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Brakebestos."
(See page 679.)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y.
(See page 679.)

Ambesco—See American Asbestos Co.

Ambler—See Keasbey & Mattison Co.

American Asbestos Co., Norristown, Pa. "Testbestos," "Ambesco."
(See page 581.)

American Brake-Lining Co., Lansdale, Pa. "A-B-C," "Wales." (See page 679.)

American Mills Co., 29 W. 19th St., New York, N. Y. "Duratex," "Standard."
(See pages 579 and 580.)

American Mills Co. of N. Y., 438 Broadway, New York, N. Y. "Turweb."

American Republics Products Co., New York, N. Y. "Puro Best."

Appleby & Co., T. H., 107 N. Franklin St., Syracuse, N. Y. "Acme," "Trubestos."

Arno—See Cincinnati Rubber Mfg. Co.

Asbestite—See Majestic Auto Products Corp.

Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Motorbestos." (See page 601.)

Autobestos—See Keasbey & Mattison Co.

Arwell Equipment Co., 214 Wood St., Pittsburgh, Pa.

Bond Co., Charles, 520 Arch St., Philadelphia, Pa. "Fabritex."

Brakebestos—See Advance Packing & Supply Co.

Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1049.)

Bull Dog—See Reardon Co.

Burlington Basket Co., 600 N. Main St., Burlington, Iowa. "Everlasting."

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Arno." (See page 531.)

Consolco—See Consolidated Packing & Supply Co.

Consolidated Packing & Supply Co., 21 Barclay St., New York, N. Y. "Consolco."
(See page 461.)

Couch Bros. Mfg. Co., East Point, Atlanta, Ga.

Dependon Auto Specialty Co., 1403-16 Michigan Ave., Chicago, Ill. "Triplex."

Detroit Cork Co., Book Bldg., Detroit, Mich.

Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."

Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Griptite."
(See page 583.)

Durabestos—See United Asbestos & Packing Co.

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Duratex—See American Mills Co.

Durwyllan Co., Paterson, N. J. "Wirebestos."

Essex Rubber Co., May & Blakes Sts., Trenton, N. J.

Ever Ready—See Kelso Mfg. Co.

Everlasting—See Burlington Basket Co.

Fabritex—See Bond Co.

Federal Asbestos Co., 149 Hamburg Ave., Paterson, N. J. "Fordbestos."

Ford Mfg. Co., Howard, Coldwater, Mich.

Fordbestos—See Federal Asbestos Co.

Garco—See General Asbestos & Rubber Co.

Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."

General Asbestos & Rubber Co., Charleston, S. C. "Garco." (See Back Cover.)

Gilmer Co., L. H., Philadelphia, Pa.
(See page 117.)

Globestos—See United & Globe Rubber Co.

Griptite—See Dominion Asbestos & Rubber Corp.

Hebert Mfg. Co., 575 Central St., Franklin, N. H.

Hold-Fast—See Illinois Rubber Tire Co.

Holdwell—See Mikasell Brothers Co.

Illinois Rubber Tire Co., 1803 Michigan Ave., Chicago, Ill. "Hold-Fast."

J-M Non-Burn—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."

K. H. K.—See Kay Co., K. H.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler," "Autobestos."

Kelso Mfg. Co., Trenton, N. J. "Ever Ready." (See page 581.)

Kregg—See Krieger & Son.

Krieger & Son, E., Tompkins Ave. & Quincey St., Brooklyn, N. Y. "Kregg."

Libby Auto Accessories, Inc., Guaranty Trust Bldg., New York, N. Y.

Everything is listed under the NOUN or principal word



ATTRACTIVE PROPOSITION
TO JOBBERS AND DEALERS
Send for Samples and Discounts

VOGT MFG. CORPORATION

Weavers for more than Forty Years

ROCHESTER

NEW YORK

DOMINION

Asbestos & Rubber Corp.

*Dominion Auto Sheet
Packing (Red and Black)
Kidskin Sheet Packing
Rodtite Auto Pump Pack-
ing*

*Griptite Asbestos Brake
Lining*

Griptite Clutch Facings

**DOMINION ASBESTOS &
RUBBER CORPORATION**

Main Office: 154 Nassau St., N. Y.

Service Branches

Baltimore, Cincinnati, Indianapolis,
Los Angeles, New York, 67 Murray
St., Norfolk, Philadelphia, San Fran-
cisco, Seattle.

BRAKE LINING



is so constructed that it becomes proof against the action of oil---grease---water---wind or dust---and has an extra long life against the constant wear to which a brake lining is subjected.

Wearwell Gasket & Packing Company

General Office & Factory: Camden, N. J.

Please mention The Automobile Trade Directory

LINING, Brake, for Fords (Continued)

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Longwear—See Wearwell Gasket & Packing Co.
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Zebra."
 Majestic Auto Products Corp., 2 Columbus Circle, New York, N. Y. "Asbestite."
 Mikesell Brothers Company, 158 N. La Salle St., Chicago, Ill. "Holdwell," "Rattleproof." (See page 315.)
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.
 Monasco—See Monarch Auto Specialties Co.
 "Moto-Bestos"—See Asbestos & Rubber Works of America.
 Paragon—See Doerner & Co.
 Perfection—See Gelsel Co.
 Powers Mfg. Co., Waterloo, Ia. (See page 581.)
 Puro Besto—See American Republics Products Co.
 Raybestos Co., Bridgeport, Conn. (See page 577.)
 Raydex Mfg. Co., Brackenridge, Pa.
 R-E—See Roose Mfg. Co.
 Rattleproof—See Mikesell Brothers Co.
 Reardon Co., 209 State St., Peoria, Ill. "Bull Dog."
 Reflex Mfg. Co., 622 Harrison St., Fort Wayne, Ind.
 Rochester Woven Belting Co., Commercial St., Rochester, N. Y. "Tuflex."
 Roose Mfg. Co., 527-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)
 S-M-C—See Staybestos Mfg. Co.
 Scandinavia Belting Co., 106 Reade St., New York, N. Y.
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 309.)
 Standard—See American Mills Co.
 Standard Brake Lining Co., Wilkins St., Hudson, Mass.
 Staybestos Mfg. Co., 5534 Lena St. (Germantown), Philadelphia, Pa. "Universal," "S-M-C."
 Sterling Asbestos Co., 625 Decatur St., Brooklyn, N. Y.
 Testbestos—See American Asbestos Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 551.)
 Trubestos—See Appleby & Co.
 Tuflex—See Rochester Woven Belting Co.
 Tufweb—See American Mills Co. of New York.
 United & Globe Rubber Co., Prospect & Fraser Sts., Trenton, N. J. "Globestos."
 United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Durabestos."
 Universal—See Staybestos Mfg. Co.
 Viking—See Vogt Mfg. Corp.
 Vogt Mfg. Corp., Rochester, N. Y. "Viking." (See page 583.)
 Wales—See American Brake-Lining Co.
 Wearwell Gasket & Packing Co., Camden, N. J. "Longwear." (See page 583.)
 White Stripe—See Advance Automobile Accessories Corp.
 Wirebestos—See Durwyllan Co.

Woven Steel Hose & Rubber Co., Dale St., Trenton, N. J.
 Wright Motor Specialties Co., 1236 Michigan Ave., Chicago, Ill.
 Zebra—See McElroy Belting & Hose Co.

LINING CUTTERS—See Cutters, Brake Lining**LINING, Fabric Radiator**

Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)

LINING, FRAME—See Lining, Body or Frame**LINING, RADIATOR—See Lining, Fabric Radiator****LINING, TRANSMISSION BAND FOR FORDS—See Lining, Brake****LINKS, STEERING—See Connections, Steering****LINKS, Steering, for Fords**

Balcrank—See Cincinnati Ball Crank Co.
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 289.)

LINKS, Tire Chain Repair

American Auto Products Co., 1219 L St., N. W., Washington, D. C. "Klinch-Linx."
 Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn.
 Klinch-Linx—See American Auto Products Co.
 Lightning Coupler Link Co., 1020 N. Canal St., Sharpsburg, Pa.
 Mentzer & Co., J. P., 2210 S. Park Ave., Chicago, Ill.
 Stolp Co., 2210 S. Park Ave., Chicago, Ill.

LINOLEUM

(For covering Floor and Running Boards)

American Linoleum Mfg. Co., 366 Fifth Ave., New York, N. Y. "Wild's."
 Armstrong Cork Co., 124 23d St., Pittsburgh, Pa.
 Blabon Co., Geo. W., 21st St. & Hunting Park Ave., Philadelphia, Pa.
 Cook's Linoleum Co., E. State St., Trenton, N. J.
 Lin-Rhuber—See Sloane, W. & J.
 Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
 Nairn Linoleum Co.—See Sloane, W. & J.
 Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.
 Ringwalt Linoleum Works, 330 Fifth Ave., New York, N. Y.
 Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (Sole Distributors for Nairn Linoleum Co., Newark, N. J.) "Lin-Rhuber." (See page 585.)
 Wild's—See American Linoleum Mfg. Co.

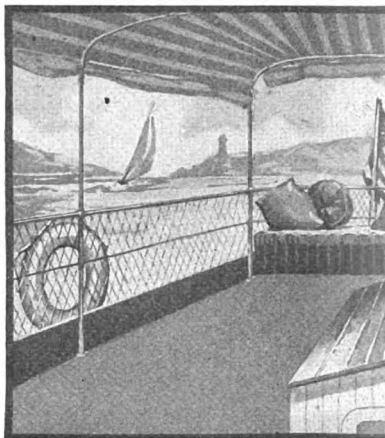
LINOLEUM CEMENT—See Cement, Linoleum

Everything is listed under the NOUN or principal word



For Automobiles

On floors and running boards. Standard equipment for many well known makes. Will last as long as the car.



For Motor Boats

The trimmest covering for decks and cabin floors. Slowest to show dirt, and easiest to clean.

NAIRN

PLAIN COLOR LINOLEUMS



"Send for Nairn booklet 'C' showing patterns in full color."

THE NAIRN LINOLEUM COMPANY
Newark, N. J.

W. & J. SLOANE

Sole Selling Agents

**575 Fifth Avenue,
New York**

**216-28 Sutter Street,
San Francisco**

Please mention The Automobile Trade Directory

LIQUID GLUE, AIRPLANE—See **Glue, Airplane Liquid**

LIQUIDS, PRIMING—See **Fluids, Priming**

LOAD GOVERNORS—See **Meters, Truck Load Indicating**

LOAD INDICATING METERS—See **Meters, Truck Load Indicating**

LOADERS, Grease Gun

Colson, H. H., 3225 Dickens Ave., Chicago, Ill. "Handy."

Edmund, W. H., 435 E. Preston St., Baltimore, Md.

Handy—See Colson, H. H.
Straitlyne Filler Co., 847 University Ave., Berkeley, Cal.

LOADERS, Truck

Haiss Mfg. Co., George, 141st St. & Park Ave., New York, N. Y.

Lee Trailer & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 989.)

Link-Belt Co., Indianapolis, Ind. (See page 237.)

Revoluator Co., Jersey City, N. J.

LOCK NUTS—See **Nuts, Lock**

LOCK SWITCHES—See **Switches, Lock**

LOCK SWITCHES FOR FORDS—See **Locks, Switch and Coil**

LOCK VALVES—See **Valves, Gasoline Lock**

LOCK WASHERS—See **Nuts and Washers, Lock**

LOCKERS, Metal Clothes

All-Steel-Equip Co., 150 John St., Aurora, Ill.

Berger Mfg. Co., 1033 Belden Ave., N. E., Canton, O. "Berloy."

Bergmann Mfg. Co., 152 N. Eleventh St., Philadelphia Pa. "Columbia."

Berloy—See Berger Mfg. Co.

Buffalo Wire Works Co., 431 Terrace, Buffalo, N. Y.

Columbia—See Bergmann Mfg. Co.

Darby & Sons Co., Edward, 412 N. 18th St., Philadelphia, Pa. "Pen-Dar."

Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.

Dunham Co., Thos., Aurora, Ill. "Equip-to." (See page 163.)

Durand Steel Locker Co., 1599 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 537.)

Equipto—See Dunham Co.

Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.

Hart & Hutchinson Co., New Britain, Conn.

Hettis Co., Dime Bank Bldg., Detroit, Mich.

Jefferis Co., R. W., 11th & Linden Sts., Camden, N. J.

Lyon Metallic Mfg. Co., (Montgomery) Aurora, Ill.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."

Mecco—See Manufacturing, Equipment & Engineering Co.

Medart Mfg. Co., Fred, Potomac & De Kalb Sts., St. Louis, Mo.

New York Machinery Co., 200 Fifth Ave., New York, N. Y.

Pen-Dar—See Darby & Sons Co.

Shults & Co., H. H., 24 Commercial St., Goshawanda, N. Y.

Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.

Van Dorn Iron Works Co., 2435 E. 79th St., Cleveland, O.

LOCKS, Automobile

(To prevent theft of cars; for Lock Switches—See Switches, Lock; for Lock Valves—See Valves, Gasoline; for Car Door Locks—See Locks, Car Door)

A. A. Auto Lock Co., McCormick Bldg., Chicago, Ill.

A. A. C.—See Automotive Appliance Corp.

Able Mfg. Co., 731-33 Folsom St., San Francisco, Cal. (See page 591.)

Automat-Co.—See Automotive Material Co.

Automotive Appliance Corp., 144 W. Vermont St., Indianapolis, Ind. "A. A. C."

Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 919.)

Autoloc—See Slaymaker Lock Mfg. Corp.

B & E Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evans."

Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 593.)

Best Auto Lock Co., 109 Endicott Arcade, St. Paul, Minn.

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Hager."

Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo. "Powersteel Autowlock."

Cairwold Mfg. Co., Third & Huntingdon Sts., Philadelphia, Pa. "Snap-on."

Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Carsafe."

Carsafe—See Cammen Laboratories Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)

Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.

Cleveland Auto Lock Co., Citizens Bldg., Cleveland, O. "Stan-Loose."

Connecticut Telephone & Electric Co., Meriden, Conn.

de Sanno & Son, A. P., 1252 N. Broad St., Philadelphia, Pa. "Defiance."

Decker Co., Richard M., 2809 Indiana Ave., Chicago, Ill. (See page 589.)

Defiance—See de Sanno & Son.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Electro Depositing & Mfg. Co., 2206 Wash St., St. Louis, Mo.

Evans—See B. & E. Lock Co.

Ever-Safe Auto Lock Co., 1161 University Ave., St. Paul, Minn.

F. O. B. Mfg. Co., 520 Arch St., Philadelphia, Pa. (See page 595.)

Fer-O-Lok—See Ferro Mfg. Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-O-Lok." (See page 407.)

Gasco Mfg. Co., Lancaster, Pa. "Miller-Gasco."

General Utility Co., 1326-30 Ogden St., Philadelphia, Pa. "Parker."

Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 987.)

Gray Lock Co., 2604 Ninth Ave., Oakland, Cal.

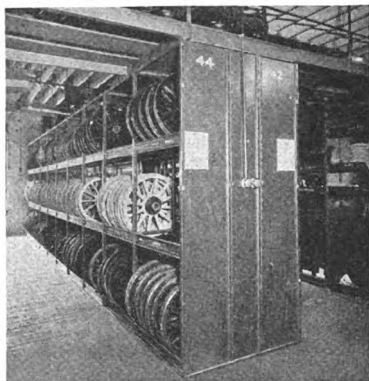
Green Lock Co., 418 Lightener Bldg., Detroit, Mich. (See page 855.)

H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Neutralock."

Everything is listed under the NOUN or principal word

DURAND STEEL RACKS

DURAND Steel Racks are instantly adaptable to any storage need. By the use of steel dividers, and steel bin fronts, or Durand Steel Boxes, the most minute parts may be kept safely. On the other hand, fenders, tires, wheels, gears, and the like, may be stored compactly and conveniently.



The flexibility of arrangement of Durand Steel Racks makes it possible to group component parts for greatest convenience. Durand Steel Racks save floor space, save unnecessary steps, speed up service, and reduce inventory labor. They are fireproof, easily taken down, moved and re-erected, and constitute a permanent asset on your books.

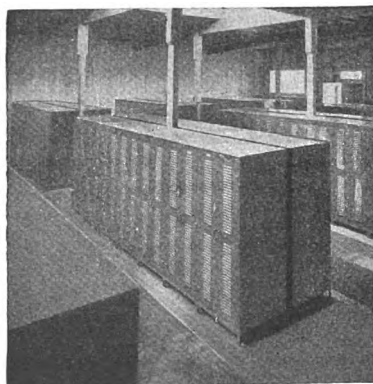


Durand Steel Lockers are the product of long specialization and experience, and are unsurpassed in simplicity and strength. Having few projecting parts, they are easily kept clean. Locks, doors, hinges, etc., are accurately made and smooth-working.

Write for catalogue of Steel Lockers or Steel Racks. Our Engineering Department will gladly help you with plans.

DURAND STEEL LOCKER CO.

1599 Fort Dearborn Bank Building, Chicago
599 Park Row Building, New York City



DURAND STEEL LOCKERS

Please mention The Automobile Trade Directory

LOCKS, Automobile (Continued)

Hager—See Bradsto Appliances.
 Handee—See Racine Handy Mfg. Co.
 Hays, R. A., 70 E. 22d St., Chicago, Ill. (Factory Representative for Security Mfg. Co., Los Angeles, Cal.)
 Helsbels, 127 N. Dearborn St., Chicago, Ill.
 Hershey Mfg. Co.—See Simplex Corp.
 Hillburg Transmission Lock Co., Island Ave., McKees Rocks, Pa.
 Hugro Mfg. Co., Warsaw, Ind. "Liberty."
 International Accessories Corp., 65 Main St., Buffalo, N. Y. "Yell-O-Gard."
 Jensen, George C., 358 First St., San Francisco, Cal.
 Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill. (See page 595.)
 K. & S. Auto Heater & Lock Co., 2357 S. Michigan Ave., Chicago, Ill. (See page 487.)
 Karlok—See Russell Sales Co.
 Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.
 King Mfg. Co., 3537 S. Broadway, Denver, Colo.
 Leader—See Walker Motor Car Specialties Co.
 Liberty—See Hugro Mfg. Co.
 Loxit—See Motor Parts Co.
 Lucia Mfg. Co., 32 Union Pl., Hartford, Conn.
 McCoy Auto Lock Co., Race St., Lockport, N. Y.
 Miller-Gasco—See Gasco Mfg. Co.
 Monarch Auto Lock Co., 361 Market St., Kenosha, Wis.
 Motor Car Specialty Co., Tenth & Diamond Sts., Philadelphia, Pa.
 Motor Parts Co., Ambridge, Pa. "Loxit."
 Neutrallock—See H-R Mfg. Co.
 North Side Buick Sales Co., 918-26 Sheridan Rd., Chicago, Ill.
 Nulock Mfg. Corp., 1639 Broadway, New York, N. Y.
 Parker—See General Utility Co.
 Paul Auto Combination Lock Co., 1118 Gratiot Ave., Detroit, Mich.
 Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 595.)
 Powersteel Autowlock—See Broderick & Bacon Rope Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Relco—See Reliance Co.
 Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Relco."
 Rochester Safety Lock Co., 530 Main St., Rochester, Ind.
 Rush—See Thomas-Andrews Corp.
 Russell Sales Co., 554 Broad St., Newark, N. J. "Karlok."
 Secret Service—See Worcester Auto Lock Co.
 Security Mfg. Co.—See Hays, R. A.
 Sheppard & Co., J. E., 54 Commercial St., Worcester, Mass.
 Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theft-proof.") (See page 595.)
 Slaymaker Lock Co., 308-70 First St., Lancaster, Pa. "Autoloc."
 Snap-On—See Cairwood Mfg. Co.
 Stan-Loose—See Cleveland Auto Lock Co.
 Stewart Mfg. Co., Oakland, Cal. (See page 249.)
 Terry-McCluskey Auto Lock Co., 1821 Berteau Ave., Chicago, Ill.
 Theftproof—See Simplex Corp.

Thomas-Andrews Corp., Waukegan, Ill. "Rush." (See page 951.)
 Trosien, Charles G., 108 Franklin Blvd., Pontiac, Mich.
 USA—See Universal Safety Appliance Corp.
 Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "USA."
 Walker Motor Car Specialties Co., 301-03 13th St., Oakland, Cal. "Leader."
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)
 Worcester Auto Lock Co., 104 Fifth Ave., New York, N. Y. "Secret Service."
 Yell-O-Gard—See International Accessories Corp.

LOCKS, BOX—See Locks, Cabinet

LOCKS, Cabinet and Pad

B-A-R—See Iowa Lock & Mfg. Co.
 Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 593.)
 Berkman Mfg. Co., 625 W. Jackson Blvd., Chicago, Ill. "No-Key."
 Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 591.)
 Corbin Cabinet Lock Co., New Britain, Conn.
 Eagle Lock Co., 105 Chambers St., New York, N. Y.
 Frain Lock Co., E. T., Park Ave. & Jefferson St., Lancaster, Pa.
 Iowa Lock & Mfg. Co., Tama Bldg., Burlington, Iowa. "B-A-R."
 Junkunc Bros., 1145 W. Garfield Blvd., Chicago, Ill.
 King Lock Co., 319 W. Ohio St., Chicago, Ill.
 Miller Lock Co., 4518 Tacony St., Philadelphia, Pa.
 No-Key—See Berkman Mfg. Co.
 Sargent & Co., Water & Wallace Sts., New Haven, Conn.
 Slaymaker Lock Co., 308-70 First St., Lancaster, Pa.
 Yale & Towne Mfg. Co., Stamford, Conn. (See page 599.)

LOCKS, Car Door

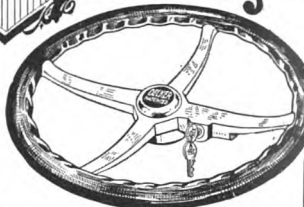
American Brass Novelty Co., Grand Haven, Mich.
 Baird Lock Co., 1426 N. Wells St., Chicago, Ill. (See page 593.)
 Bremmer & Terris Mfg. Co., 542 W. Jackson Blvd., Chicago, Ill. "Christie Miracle."
 Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 591.)
 Christie Miracle—See Bremmer & Terris Mfg. Co.
 Cowles & Co., C., New Haven, Conn.
 Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 English & Mersick Co., New Haven, Conn. (See page 571.)
 E. V. B. Mfg. Co., 442 York St., New Haven, Conn.
 Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.
 McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Everything is listed under the NOUN or principal word

DECKER LOCK-STEERING WHEEL



For
Ford, Dodge
Chevrolet 490
Maxwell and
Overland 4 Cars



Approved by Underwriters' Laboratories

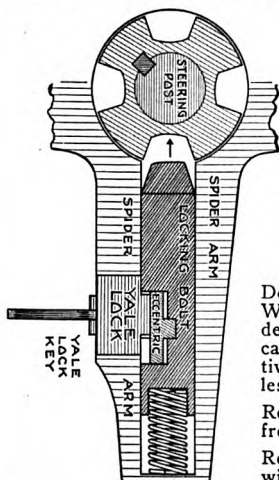
FORD DESIGN

OTHER MAKES DESIGN

A strikingly handsome steering wheel with a built-in lock that is correct in principle, simple in construction and faultless in operation.

Oversize wheel—17"—increases steering ease and driving control from thirty-three and one-third to fifty percent.

You should know beyond the question of a doubt that the steering wheel lock you recommend and sell positively gives maximum theft protection and is absolutely safe to drive with.



Free or Spinning Position

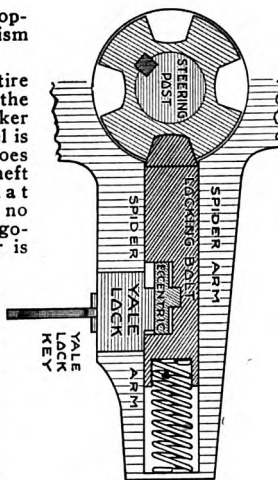
Study illustration of operating mechanism shown herewith.

Prove to your entire satisfaction that the principle of the Decker Lock-Steering Wheel is correct, therefore, does offer the limit of theft protection and that there is absolutely no chance of anything going wrong while car is being driven.

Decker Lock-Steering Wheels Aluminum Spider Models dress up the car. They are distinctive in design and faultlessly finished.

Retail prices range from \$7.50 to \$15.00.

Representative jobbers will be pleased to serve you.



Driving Position

Write us for catalog, advertising matter and dealers' selling helps.

RICHARD M. DECKER COMPANY
2907 Indiana Avenue, :: CHICAGO, ILLINOIS

Please mention The Automobile Trade Directory

LOCKS, Car Door (Continued)

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.
 National Seal Co., 147 41st St., Bush Terminal, Brooklyn, N. Y.
 Ochsner & Sons Co., A., 1000 State St., New Haven, Conn.
 Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
 Slaymaker Lock Co., 808-70 First St., Lancaster, Pa.
 Smith & Co., Jos. N. 2461-91 E. Grand Blvd., Detroit, Mich.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.)
 (See page 377.)
 Ternstedt Mfg. Co., Artillery & Muster Aves., Detroit, Mich. (See page 785.)
 Variety Mfg. Co., 2958 Carroll Ave., Chicago, Ill.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOCKS, CHAIN—See Locks, Tire Chain

LOCKS, CRANK, FOR FORDS—See Locks, Starting Crank

LOCKS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

LOCKS, DOOR—See Locks, Car Door

LOCKS, Emergency Gear Lever for Fords

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

LOCKS, Manifold

Fallon Machinery Co., 31 Marshall's Wharf, Lynn, Mass.

LOCKS, Motorcycle

A-K—See Angsten-Kox Co.
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
 (See page 537.)

LOCKS, NUT—See Nuts, Lock

LOCKS, PAD—See Locks, Cabinet

LOCKS, Pedal, for Fords

(For locking clutch pedal in neutral or brake pedal in on position)

E. T. Auto Lock Co., 1015 Grand Ave., Des Moines, Iowa.
 Geiser Bros., 1917 Fairmount Ave., Cincinnati, O.
 Lee Hardware Co., Salina, Kans.
 Rischmuller Mfg. Co., 3443 19th St., San Francisco, Cal.

LOCKS, Radiator Cap and Thermometer

Barry-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich. "Weed."
 Lock-A-Meter—See White Products Co.

McAdams Sales Co., J. C., 51 E. 42d St., New York, N. Y. "Schlaich."
 (See page 557.)

Metalware Corp., 228 W. Superior St., Chicago, Ill. "Protex-a-cap."
 (See page 573.)

Protect-O-Cap—See Up-To-Date Machine Works.

Protex-a-cap—See Metalware Corp.

Schlaich—See McAdams Sales Co.

Smith Caplock Co., 205 W. Harrison St., Chicago, Ill.

Supporter Motometer Lock Co., 1400 S. Michigan Blvd., Chicago, Ill.
 (See page 637.)

Up-To-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. "Protect-O-Cap." (See page 527.)

Weed—See Barry-Nicholson Co.

White Products Co., 2204 S. Michigan Ave., Chicago, Ill. "Lock-A-Meter."

LOCKS, Robe

Backus Novelty Co., 901 Water St., Smethport, Pa.

Handee—See Racine Handy Mfg. Co.

Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

LOCKS, Spare Tire

Able Mfg. Co., 781-33 Folsom St., San Francisco, Cal. (See page 591.)

American Chain Co., Bridgeport, Conn. (See page 543.)

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Bantlin Co., Julius J., Cincinnati, O. "Hoover."

Bellevue Mfg. Co., Bellevue, O.

(See page 311.)

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Brookins Mfg. Co., Dayton, O.

Cleveland Chain & Mfg. Co., Cleveland, O.

Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 817.)

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.

Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill.
 (See page 569.)

Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

Hodes-Zink Mfg. Co., 113 W. State St., Fremont, O. "Sure-Fit"

(See page 595.)

Hoover—See Bantlin Co.

Hughes-Mellins—See M. & H. Novelty Co.

Johnson Automobile Lock Co., 2309

Archer Ave., Chicago, Ill.

(See page 595.)

Kant Kink—See Edstrom Machinery Co.

McKinnon Dash Co., Buffalo, N. Y.

(See page 403.)

M & H Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins."

(See page 991.)

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Kabulock."

(See page 353.)

Romon Kabulock—See Roberts & Monroe.

S-O-S—See Hite Mfg. Co.

Sargent & Greenleaf, 1176 Joseph Ave., Rochester, N. Y.

Sure-Fit—See Hodes-Zink Mfg. Co.

Upson-Walton Co., 1310 W. 11th St., Cleveland, O. "U. W." (See page 815.)

U. W.—See Upson-Walton Co.

Everything is listed under the NOUN or principal word



EVERY
COMBINATION
DIFFERENT

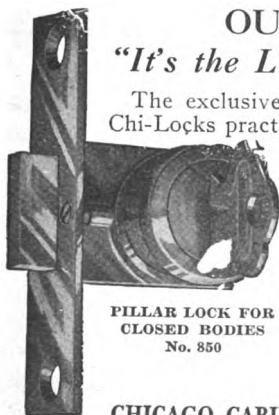
MADE OF
SPECIAL
STEEL

THE ABLE COMBINATION SPARE TIRE LOCK

Positive protection—no lock to pick, no key to lose or forget. Quickly and easily locked and unlocked by owner, day and night, by sight or sound. Attractively finished and leather bound. Nationally advertised. Officially approved by Underwriters' Laboratories. Opportunities for dealers and distributors, write

ABLE MFG. CO., 731-33 FOLSOM ST., SAN FRANCISCO, CAL.
EASTERN OFFICE: ROOM 835, 140 SO. DEARBORN ST., CHICAGO, ILL.

Also Manufacturers of Able Combination Auto Lock



PILLAR LOCK FOR
CLOSED BODIES
No. 850

OUR CUSTOMERS SAY:

"It's the Lock That's Never Been Picked"

The exclusive design of our Hook Blade Tumbler makes Chi-Locks practically thief proof.

Chi-Locks

have no springs. They are simple, strong, positive and never fail to operate smoothly and easily with the proper key. Locks for Auto-Theft Devices, Motometers, Cap Locks, Gasoline Tanks, Money Scales, Cabinets, Tool Boxes, Auto Bodies, Ignition Systems, etc., supplied direct to manufacturer at attractive prices.

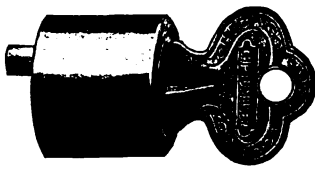
We also manufacture a full line of extruded brass padlocks.

CHICAGO CABINET LOCK CO., 3341 N. Lincoln St., Chicago, Ill.



ALL BRASS PLUG

Write for complete description of the Chi-Lock line and prices. Please state your requirements.



CYLINDER LOCK No. 284

Please mention The Automobile Trade Directory

LOCKS, Spark and Throttle Lever, for Fords

(For locking spark and throttle levers in fully advanced or retarded position)

- Adams, Alden L., 18 Ormond St., Springfield, Mass.
 B. & E. Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evans."
 Backus Novelty Co., 901 Water St., Smethport, Pa. "Utility."
 Evans—See B. & E. Lock Co.
 Fordloc—See Slaymaker Lock Co.
 Handee—See Racine Handy Mfg. Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Slaymaker Lock Co., 808-70 First St., Lancaster, Pa. "Fordloc."
 Starr Auto Lock Co., 9 View Pl. (Mt. Auburn), Cincinnati, O.
 Utility—See Backus Novelty Co.

LOCKS, Starting Crank, for Fords

(For locking starting crank in such a position that it can not be engaged or used)

- Handee—See Racine Handy Mfg. Co.
 Kranklock—See Oakes Co.
 Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Oakes Co., Indianapolis, Ind. "Kranklock." (See page 397.)
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

LOCKS, Steering Gear, for Fords

(For locking steering gear or steering wheel in a manner to prevent the turning of front wheels or steering of car)

- Bull Dog—See Hugro Mfg. Co.
 C. M. & D.—See Chicago Mfg. & Distributing Co.
 Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."
 Cleveland Auto Lock Co., Citizens Bldg., Cleveland, O. "Stan-Loose."
 Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill. (See page 589.)
 Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.
 Fer-O-Lok—See Ferro Mfg. Co.
 Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-O-Lok." (See page 407.)
 Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.
 Gasco Mfg. Co., Lancaster, Pa. "Miller-Gasco."
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)
 H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Wheelock."
 Hart & Co., Boston, Mass.
 Hershey Mfg. Co.—See Simplex Corp.
 Hugro Mfg. Co., Warsaw, Ind. "Bull Dog."
 Ideal—See Penn Pressed Metal Co.
 Junkunc Bros., 1146 W. Garfield Blvd., Chicago, Ill.
 Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.
 King Mfg. Co., 3537 S. Broadway, Denver, Colo.
 Lazear Auto Lock Wheel Co., 559 W. Quincy St., Chicago, Ill.

- Leland Lock Co., Ford Bldg., Detroit, Mich.
 Masters Mfg. Co., 66 Woolsey Sq. (Jamaica Plain), Boston, Mass.
 Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
 Miller-Gasco—See Gasco Mfg. Co.
 Moss—See Paul Auto Combination Lock Co.
 Mudd Auto Lock Co., 118-24 S. Clinton St., Chicago, Ill. "Rajo."
 Mueller—See Reliance Co.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.
 Paul Auto Combination Lock Co., 1118 Gratiot Ave., Detroit, Mich. "Moss."
 Penn Pressed Metal Co., Newton Ave. & Line St., Camden, N. J. "Ideal."
 Permu—See Whittington Mfg. Co.
 Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 595.)
 Rajo—See Mudd Auto Lock Co.
 Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Safeguard," "Mueller."
 Safeguard—See Reliance Co.
 Security Auto Lock Co., 410 N. Paulina St., Chicago, Ill.
 Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theft-proof.") (See page 595.)
 Stan-Loose—See Cleveland Auto Lock Co.
 Stop Thief Auto Lock Co., Birmingham, Ala.
 Theftproof—See Simplex Corp.
 Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "U. S. A."
 U. S. A.—See Universal Safety Appliance Co.
 Wheelock—See H-R Mfg. Co.
 Whittington Mfg. Co., Montrose, Pa. "Permu."

LOCKS, SWITCH—See Switches, Electric Lock

LOCKS, Switch and Coil, for Fords

(Look for Ignition Switches and Coil Boxes to prevent unauthorized use of car)

- Autolock—See K-W Ignition Co.
 Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.
 Cleveland Accessories Co., 705 St. Clair Ave., N. W., Cleveland, O.
 Cumming-Forstner Corp., 230 E. State St., Chicago, Ill. "Walker Ke-Les."
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)
 Jitlock—See Metal Specialties Co.
 K-W Ignition Co., 2900 Chester Ave., Cleveland, O. "Autolock."
 Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.
 Sandell Switch Lock Co., 190 Pearl St., Hartford, Conn.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 805.)
 Syracuse Universal Mfg. Co., 235-27 W. Fayette St., Syracuse, N. Y.
 Temco Electric Motor Co., 921 Sugar St., Leipsic, O.
 Walker Ke-Les—See Cumming-Forstner Corp.

LOCKS, THERMOMETER—See Locks, Radiator Cap and Thermometer

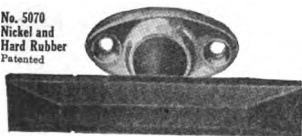
Everything is listed under the NOUN or principal word



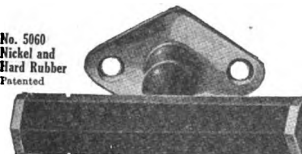
Automobile Body Hardware



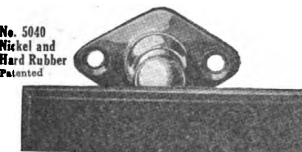
No. 5070
Nickel and
Hard Rubber
Patented



No. 5060
Nickel and
Hard Rubber
Patented



No. 5040
Nickel and
Hard Rubber
Patented

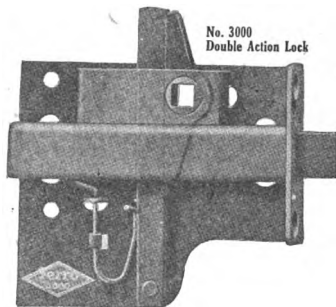


**Beauty and
Utility
are
wrought in
FERRO
quality**

**Send for
New Catalog
"F"**

**Catalog "F"
shows complete
line of
Hardware**

No. 3000
Double Action Lock



No. 5000
Nickel and
Hard Rubber
Patented



FERRO STAMPING & MFG. CO.
DETROIT, MICHIGAN



BAIRD LOCKS

Baird Pillar & Door Locks

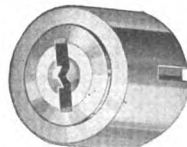
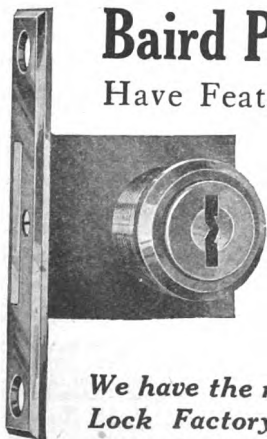
Have Features Superior to All Others

Write for Sample and Bulletin

BAIRD CYLINDER LOCKS For Auto Locking Devices

Have Exceptional Merits

*We have the most up-to-date
Lock Factory in the world*



BAIRD LOCK CO. 1424 N. WELLS ST.
CHICAGO.

Please mention The Automobile Trade Directory

LOCKS, THROTTLE LEVER, FOR FORDS
—See Locks, Spark and Throttle Lever

LOCKS, TIRE—See Locks, Spare Tire

LOCKS, Tire Chain

(To prevent the possibility of loss of the chain through clasp opening up)

Badger Mfg. Corp., Milwaukee, Wis.
"Saf-Lock." (See page 171.)
Saf-Lock—See Badger Mfg. Corp.
Smith Mfg. Co., F. A., Rochester, N. Y.
(See page 293.)

LOCKS, Transmission for Fords

Everloc—See Wood Co.
Lowery Lock Co.—See Wright Accessories Corp.
Motorgrip—See Wright Accessories Co.
Wood Co., W. C., Sixth Ave., S. E. & University Ave., Minneapolis, Minn. "Everloc."
Wright Accessories Corp., Atlanta, Ga. (Sales Department for Lowery Lock Co., Atlanta, Ga. "Motorgrip.")

LOGS, Motor Boat Shaft

List Mfg. Co., E. J., Havana, Ill.

LOOPS, Brass Snap and Strap

(See also Fittings, Top)

Anchor—See North & Judd Mfg. Co.
Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 495.)
Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
Auveco—See Auto Vehicle Parts Co.
Cowles & Co., C., New Haven, Conn.
Desoco—See Detroit Socket Co.
Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
Jonah & George, Little's Ct., Merrimac, Mass.
Metal Stamping Co., 13th St. & East Ave., Long Island, N. Y.
Nelder Co., F. A., Augusta, Ky.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
Rostand Mfg. Co., Milford, Conn.
Shepard Art Metal Co., Detroit, Mich. (See page 481.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Waterhouse & Freeman Mfg. Co., 319 N. J. R. Ave., Newark, N. J.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOOSE LEAF BOOKS—See Books, Accounting and Cost System

LOOSENERS, TIRE—See Tools, Tire

LOUVRE FORMING MACHINES—See Machines, Louvre Forming

LOW OIL ALARMS—See Alarms, Low Oil

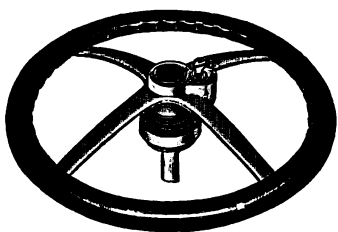
LOW WATER ALARMS—See Columns, Water

LOWERING FITTINGS FOR FORDS—See Fittings, Car Lowering

LUBRICANTS, Cutting

Acme—See Swan & Finch Co.
American Oil Corp., S. Water St., Jackson, Mich. "Minlarde."
Ajax—See Phoenix Oil Co.
Cascade—See Swan & Finch Co.
Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.
Cut-Rite—See Phoenix Oil Co.
Damasus Mfg. Co., 9501 Cassius Ave., Cleveland, O.
Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.
Detroit Soluble Oil Co., Beard & M. C. R. R., Detroit, Mich. "Kool-Kut," "Samson."
Drillline—See Krembs & Co.
Eastern Oil Co., 322 Champlain Ave., Cleveland, O.
Economy—See White & Bagley Co.
Emulso—See Sun Co.
Filelne—See Houghton & Co.
Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill.
Houghton—See Houghton & Co.
Houghton & Co., E. F., 249 W. Somerset St., Philadelphia, Pa. "Filelne," "Houghtolard."
Keep-Kool—See Phoenix Oil Co.
Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill. "Sulpho."
Kool-Kut—See Detroit Soluble Oil Co.
Krembs & Co., 173 N. Green St., Chicago, Ill. "Drillline."
Lardo—See World Oil Products Co.
Lindsay, McMillan Co., 342 Broadway, Milwaukee, Wis. "Mac Lin's."
Lube-Well—See Richards, G. Whitfield.
Mac Lin's—See Lindsay, McMillan Co.
Middle State Oil Co., Engineers Bldg., Cleveland, O. "Perfection."
Minlarde—See American Oil Corp.
Minolard—See White & Bagley Co.
Mystlo—See Swan & Finch Co.
Oakite—See Oakley Chemical Co.
Oakley Chemical Co., 23 Thames St., New York, N. Y. "Oakite."
Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoll."
Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
Panhard Oil Corp., 395 Broadway, New York, N. Y.
Pennzoll—See Oil City Oil & Grease Co.
Perfection—See Middle States Oil Co.
Phoenix Oil Co., 2584 W., Fifth St., Cleveland, O. "Ajax," "Cut-rite," "Keep-Kool."
Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Solvane."
Richards, G. Whitfield, 1723 Carlton St., Philadelphia, Pa. "Lube-Well."
Samson—See Detroit Soluble Oil Co.
Solvane—See Rhodes & Co.
Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
Sulpho—See Keystone Oil & Mfg. Co.
Sun Co., Finance Bldg., Philadelphia, Pa. "Emulso."

Everything is listed under the NOUN or principal word



PERRY

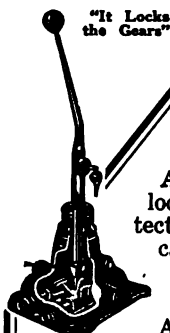
Approved by Underwriters' Laboratories

No. 9 DeLuxe for Ford, Dodge and Chevrolet Cars. Our latest additions in which the height of perfection has been reached.

Twelve other styles and sizes of wheels and locks to fit any make of car.

Write for dealers proposition

PERRY AUTO LOCK CO.
2635 Michigan Ave., Chicago, Ill.



"It Locks
the Gears"

Johnson Transmission Lock

A real *thief* proof lock that fully protects unattended cars.

Endorsed by
Underwriters

A gear shifting lever fitted with a locking device—locks with Yale key. Made for

Auburn	Chandler	Oakland
Buick	Dodge	Oldsmobile
Cadillac	Haynes	Roamer
Case	Gardner	Westcott

Durable—Simple—Safe

Easy to Install

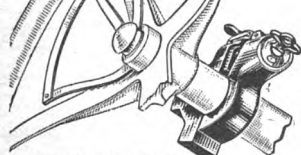
Saves 15% on Theft Insurance

JOHNSON AUTOMOBILE LOCK CO

2303 Archer Ave., Chicago, Ill.

SIMPLEX

THEFTPROOF
AUTO LOCK



\$15

Approved by Underwriters' Laboratories.
15% Reduction in Theft Insurance Premiums.

Approved Lock for All Cars

installed in 20 minutes on steering post without change in construction. Unpickable Corbin lock in unbreakable housing. Locks front wheels in straight ahead position—car cannot be steered or towed, yet complies with local ordinances.

List Price \$15—Ford Type \$7

Operated in an instant. Just turn key—that's all.

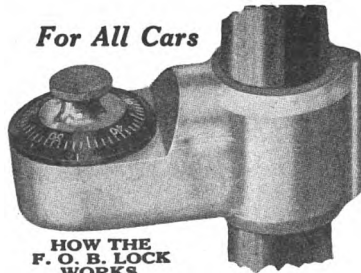
DEALERS: Order from nearest distributor—write us direct if you don't know him.

SIMPLEX CORPORATION

2214 South Michigan Avenue, Chicago, Illinois

F. O. B. COMBINATION AUTOMOBILE LOCKS

For All Cars



HOW THE
F. O. B. LOCK
WORKS

The F. O. B. Lock is made of chrome aluminum alloy. Every part is carefully machined to establish tolerance limits under the most rigid inspection and supervision. When attached it becomes an integral part of the steering system, being located a few inches below the steering wheel.

At the outer end is the combination dial, exactly like the dials used on vault doors. When the dial is turned, a direct action locking device causes a steel bolt to engage the steering column, effectually locking the entire steering system in a rigid position. The lock has a combination as easy to remember as your own telephone number. Turning the dial to the right numbers withdraws the bolt and the steering gear is again free to operate.

100% PROTECTION AT ALL TIMES

CAR MANUFACTURERS ATTENTION:
Specially designed models will be submitted for meeting standard equipment requirements at your request.

F. O. B. MFG. CO., Inc.
520 Arch Street Philadelphia, Pa.

Please mention The Automobile Trade Directory

LUBRICANTS, Cutting (Continued)

Waverly Oil Works Co., Pittsburgh, Pa.
(See page 671.)
White & Bagley Co., Worcester, Mass.
(See page 671.)
World Oil Products Co., 1436 Seneca St., Buffalo, N. Y. "Lardo."

LUBRICANTS, Spring

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
Halstead Specialties Co., 503 Market St., San Francisco, Cal. "Spring-Eez."
(See page 597.)
Johnson & Son, S. C., 1012 16th St., Racine, Wis.
Kant-Rust Products Corp., 613 St. Georges Ave., Rahway, N. J.
Never Rust—See Strater, J. Edward.
Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y.
Rie-Nie—See Durkee-Atwood Co.
Spring-Eez—See Halstead Specialties Co.
Strater, J. Edward, 2060 Euclid Ave., Cleveland, O. "Never Rust."
Thomson Auto Specialties Co., 80-90 W. Spring St., Columbus, O.

LUBRICATING GRAPHITE—See Graphite, Lubricating

LUBRICATING GREASE—See Cups, Oil and Grease.

LUBRICATING OILS—See Oils, Lubricating; also Cups, Oil and Grease

LUBRICATING SPRING STRIPS—See Strips, Spring Leaf Lubricating

LUBRICATING SYSTEMS—See Systems, Chassis Lubricating

LUBRICATOR BELTS—See Belts, Endless Fabric; also Belts, Spiral Wire

LUBRICATOR WICKING—See Wicking, Felt Lubricator

LUBRICATORS, BOLT—See Lubricators, Spring and Shackle Bolt

LUBRICATORS, CHASSIS—See Systems, Chassis Lubricating

LUBRICATORS, Cup Cylinder

(For feeding Graphite to cylinders)

Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
Woolf Graphite Lubricator Co., 3024 Ames Ave., Omaha, Neb.

LUBRICATORS, FORCE FEED—See Lubricators, Motor Boat Force Feed; also Lubricators, Tractor Force Feed

LUBRICATORS, GRAVITY—See Lubricators, Motor Boat Gravity

LUBRICATORS, HAND—See Lubricators or Oil Pumps, Hand

LUBRICATORS, MECHANICAL—See Lubricators or Oil Pumps, Mechanical

LUBRICATORS, Motor Boat Force Feed

American Injector Co., 1469 14th Ave., Detroit, Mich. "Explo." "Surefeed."
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McCord" Lubricators.) (See page 115.)
Explo—See American Injector Co.
McCord Mfg. Co., Detroit, Mich.
Manzel Bros., 309 Beard Ave., Buffalo, N. Y.
Pedersen Lubricator Co., 636 First Ave., New York, N. Y.
Surefeed—See American Injector Co.

LUBRICATORS, Motor Boat Gravity

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

LUBRICATORS, OIL AND GREASE CUP—See Cups, Oil and Grease

LUBRICATORS, Pressure

(Operated by exhaust pressure)

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.
W. H. Oil Saving Co., Lewiston, Idaho.
Wilkinson Co., Wm H., Main St., West Medway, Mass.

LUBRICATORS, SHACKLE BOLT—See Lubricators, Spring and Shackle Bolt

LUBRICATORS, Speedometer Shaft

Happy Thought—See Norman, S. E.
Norman, S. E., Franklin, Mass. "Happy Thought."

LUBRICATORS, SPRING LEAF—See Cups, Spring Leaf; also Strips, Spring Leaf Lubricating

LUBRICATORS, Spring and Shackle Bolt

(See Cups, Oil and Grease; also Belts, Spring and Shackle)

Meckel Lubricator Co., 1507 Grace Ave. (Lakewood), Cleveland, O.

LUBRICATORS, Tractor Force Feed

American Injector Co., 1469 14th Ave., Detroit, Mich. "Explo." "Surefeed."
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "McCord" Lubricators.) (See page 115.)
Explo—See American Injector Co.
McCord Mfg. Co., Detroit, Mich.
Madison-Kipp Co., 2227 Waubesa St., Madison, Wis.
Manzel Bros. Co., 309 Beard Ave., Buffalo, N. Y.
Surefeed—See American Injector Co.

Everything is listed under the NOUN or principal word



—the mixture exploded!

and out of the chaos there came a peculiar non-inflammable product with an affinity for rust, which when later combined with a pure lubricant, made the secret formula for

SPRING-EEZ



the penetrating, rust-dissolving lubricant of many uses.

Get the magic rust solvent that stops squeaks in automobiles. It is applied to springs with a brush—no need to even spread them.

It penetrates between the leaves without help, eliminates rust and deposits a lubricant.

In the same manner it makes the removal of "rust-frozen" nuts, bolts, etc., easy—when applied.

Dealers may purchase through their jobber. If not yet stocked by your jobber or dealer advise us and we will see that you are supplied immediately.

See our national advertising in Saturday Evening Post

Manufactured by

HALSTEAD SPECIALTIES CO. 503 Market St. San Francisco

Eastern Factory Representatives:

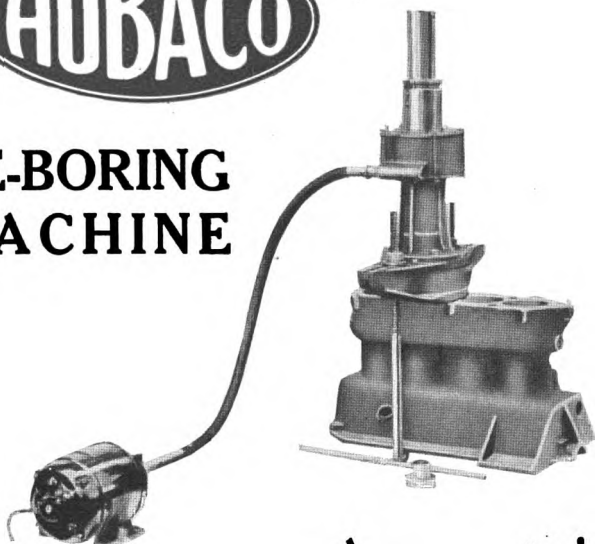
1919 Michigan Ave.
CHICAGO

THE EDWARDS SALES CO. 50 East 42d Street
NEW YORK

	No.	Pkgs.
	in	in
	Pkg.	crate
\$1 a pint.....	10	10
\$6 a gallon..	1	10



RE-BORING MACHINE



Accurate!

Accurate to .0005 of an inch.

Weight to be lifted to cylinder base 60 lbs.

Re-bores cylinder varying from $2\frac{1}{2}$ to $5\frac{1}{8}$ inches (inclusive) in diameter.

THE HUBACO Re-boring machine makes errors in cylinder re-boring mechanically impossible. It performs perfectly the most difficult re-boring job without the services of a skilled mechanic.

Used wherever an extremely accurate, portable, inexpensive cylinder re-boring machine is required.

Write for Booklet today

HUGHSON-BACON COMPANY

"TOOLS OF QUALITY"

OAKLAND, CALIFORNIA

AMERICAN COMBINATION AUTOMOBILE LOCK

LOCKS IGNITION 100% PERFECT



Sell the lock that offers the "Greatest Protection on Earth." Attached to instrument board, the nickel-plated front plate and combination dial are the only parts visible. Removal of center screw

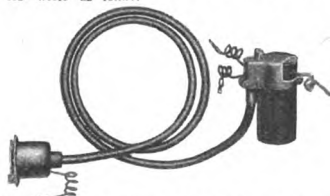
enables owner to change combination at will, insuring absolute protection from theft.

One Complete Turn of the Dial Locks Your Car—

One and a Half Seconds to Unlock

The illustration below shows complete lock assembly, including lock, tempered steel conduit and steel cover protecting coil terminals.

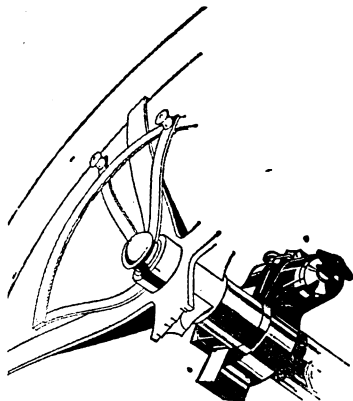
Retail price, \$24.50. Liberal discount to dealers—write us today.



Can be installed on any car having battery or low tension ignition.

**American Devices National Sales
Syndicate, Inc.**

Consumers Bldg., 220 S. State St., Chicago



Theftproof Auto Lock

Approved by Underwriters—reduces cost theft insurance 15%.

Simple—positive—convenient. Installed by any mechanic in 20 minutes. For all cars except Fords and Maxwells.

HERSHEY MFG. CO.

20 E. Jackson Blvd.
Chicago, Ill.

Equitable Bldg.
Denver, Colo.



The Name YALE on an Automobile Lock



*Yale Standard
Padlock*



*Yale Automobile
Switch Lock*

To everyone who knows—and thousands do—the name Yale on a lock is the highest stamp of lock excellence.

On an automobile lock, it is significant also of the excellence of the car.

Yale Cylinder Locks and other types for motor cars are specially made in various styles and sizes for securely locking ignition switches, gear-shift levers, doors, tire holders, luggage boxes, trunks, etc. Your car should have them.

Write today for complete information

THE YALE & TOWNE MFG. CO.

Stamford, Conn., U. S. A.

Yale Made Is Yale Marked



*Yale No. 307 Automobile
Door Lock*

Please mention The Automobile Trade Directory

LUBRICATORS or OIL PUMPS, Hand

(Auxiliary Hand Oil Pumps)

- Cox Brass Mfg. Co., Albany, N. Y.
(See page 171.)
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

LUBRICATORS or OIL PUMPS, Mechanical

(Engine driven Oil Pumps)

- Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
Hancock Mfg. Co., 770 Henry St., Charlotte, Mich.
Higgins Machine Works, 25 Keystone St., Buffalo, N. Y. "Osgoods."
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Milwaukee Circulating Pump Co., Milwaukee, Wis.) (See page 345.)
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.
Mystic—See Cataract Refining & Mfg. Co.
Osgoods—See Higgins Machine Works.
Pedersen Lubricator Co., 630 First Ave., New York, N. Y.
Richardson-Phenix Co., 123-23 Reservoir Ave., Milwaukee, Wis.
Schirmer Co., 7319 W. Madison St., Cleveland, O. "Viking."
Viking—See Schirmer Co.

LUBRICATORS and OIL PUMPS, for Fords

(Supplementary oiling devices)

- Auto Accessories Mfg. Co., 509 Mulberry St., Des Moines, Iowa. Strong.
Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
Centri—See Forgear Pump Co.
Consolidated Mfg. Co., 1440 Broadway, Oakland, Cal. "Wilmo."
Craig-Hunt—See Speedway Engineering Co.
Forgear Pump Co., 523 Hobart St., Oakland, Cal. "Centri."
Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.
Johnston Mfg. Co., William R., 451-469 E. Ohio St., Chicago, Ill. (See page 653.)
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Milwaukee Circulating Pump Co., Milwaukee, Wis.) (See page 345.)
Junior—See Pedersen Lubricator Co.
Kittle Mfg. Co., 641 Santa Fe Ave., Los Angeles, Cal. (See page 519.)
Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.
Pedersen Lubricator Co., 630 First Ave., New York, N. Y. "Junior."
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 409.)
Standex, Inc., 341 E. Ohio St., Chicago, Ill.
Strong—See Auto Accessories Mfg. Co.
Wilmo—See Consolidated Mfg. Co.

LUGGAGE BAGS FOR FORDS—See Bags, Luggage

LUGGAGE CARRIERS—See Holders, Sub Case; also Racks, Trunk; also Trunks; also Carriers, Motorcycle Luggage

LUGGAGE CASES FOR FORDS—See Bags, Luggage

LUGGAGE HOLDERS—See Holders, Sub-case or Luggage

LUGS, Tire

Andrews Heating Co., 2529 University Ave. S. E., Minneapolis, Minn.

LUGS, Tractor Detachable

Bentz—See Schell, Walter S.
Laxon—See Universal Lug Co.
Schell, Walter S., 1307-09 Market St., Harrisburg, Pa. "Bentz."
Universal Lug Co., 1401 S. 55th Ct., Cicero, Ill. "Laxon."
Warren Steel Castings Co., 3400 Maury Ave. St. Louis, Mo.

LUGS, Transmission Band, for Fords

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

LUMBER, Airplane

Astoria Veneer Mills & Dock Co., 347 Madison Ave., New York, N. Y.
Central Timber Export Co., 15 William St., New York, N. Y.
Dodge Mfg. Co., S. Union St., Mishawaka, Ind. "Indestructo."
Hoffman Bros. Co., 800 W. Main St., Fort Wayne, Ind.
Indestructo—See Dodge Mfg. Co.
Kneeland-Bigelow Co., 19th & Water Sts., Bay City, Mich.
Kosse Shoe & Schleyer Co., Carew Bldg., Cincinnati, O.
Multnomah Lumber & Box Co., Bancroft St., Portland, Ore.
North Vernon Lumber Mills, North Vernon, Ind.
Thompson & Co., Lewis, Astoria, N. Y.

LUMBER, Automobile

Abeles & Taussig Tie Corp., Commercial Bldg., St. Louis, Mo.
Agasote—See Pantasote Co.
American Column & Lumber Co., St. Albans, W. Va.
Anderson-Tully Co., N. Second St., Memphis, Tenn.
Arkla Lumber & Mfg. Co., 881 E. Seventh St., Brooklyn, N. Y.
Baker Lumber Co., Turrell, Ark.
Bramble, A. D., Palmer, Mass.
Buffalo Hardwood Lumber Co., 340 Seneca St., Buffalo, N. Y.
Carrier Lumber Co., Brevard, N. C.
Carrier Lumber & Mfg. Co., Sardis, Miss.
Chickasaw Lumber Co., Demopolis, Ala.

Everything is listed under the NOUN or principal word

"American Junior" Tire Pump THE WONDER PUMP

The American "Junior" Pump will give you quick turnovers, "large profits," satisfied customers. Note the specifications, then write or wire.

Height over all, 21 inches.

Barrel, 1½ inches.

Solid Brass, Satin Finish (will not rust).

Malleable Cast Base (will not break).

Cloth Covered Hose (will not crack).

Schrader Connections.

Handle Hardwood Natural Finish (will not come off).

Automatic Valve in Base (cannot be tampered with).



LIST PRICE

\$4.00

The discount to both Jobber and Dealer is greater on this wonderful Pump than any other Tire Pump on the market.

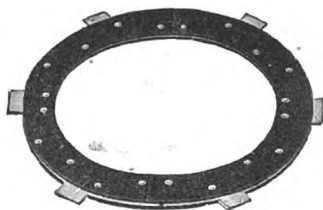
Let us send you one. Look it over. Compare our Price and Product. Don't hesitate.

American Device Manufacturing Co.
4523 SHAW AVENUE, ST. LOUIS, MO.

Moto-Bestos

"Quick Stop"

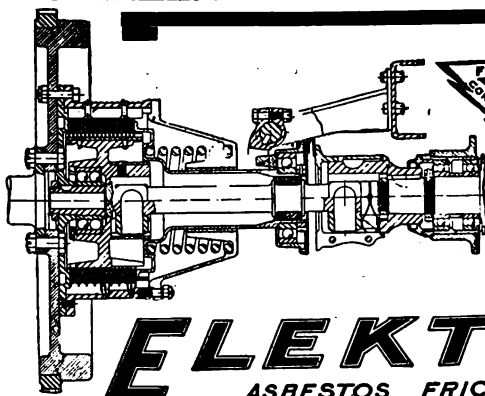
Woven Brake Lining
AND



Clutch Disc Facings

**ASBESTOS & RUBBER WORKS
OF AMERICA**

1819 Broadway, New York
1118 S. Michigan Ave., Chicago
66 Battery March St., Boston
7016 Euclid Ave., Cleveland



ELEKTRA
ASBESTOS FRICTION

Our Patented Process makes ELEKTRA ASBESTOS FRICTION FACING the most satisfactory high-friction facing for manufacturers' use. It insures efficient, dependable performance and long wear.

Write and tell us specifically what you need. We can give you gratifying terms and service.

Our band linings, rings and cones for clutches are accurately formed to shape and size and give no trouble in installation.

F. L. HORTON CORPORATION
36 WHITTIER STREET, ROXBURY, MASS.

Please mention The Automobile Trade Directory

LUMBER, Automobile (Continued)

Coppes Bros. & Zoak, Nappanee, Ind.
 Darling Lumber Co., J. W., Cincinnati, O.
 Evans Lumber Co., G. H., Chattanooga, Tenn.
 Haskellite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Himmelberger-Harrison Lumber Co., Cape Girardeau, Mo.
 Hoffman Bros. Co., 300 W. Main St., Fort Wayne, Ind.
 Korn Co., Gwynne Bldg., Cincinnati, O.
 Lake Independence Lumber Co., 623 S. Wabash Ave., Chicago, Ill.
 Lamb-Fish Lumber Co., Charleston, Miss.
 Leonard, H. R., Seaboard Bank Bldg., Norfolk, Va.
 Love, Boyd & Co., ft. S. Second St., Nashville, Tenn.
 Luehrmann Hardwood Lumber Co., Chas. F., 148 Carroll St., St. Louis, Mo.
 Martin-Barriss Co., 3048 W. Third St., Cleveland, O.
 Moore & McFerren, 365 N. Front St., Memphis, Tenn.
 Multnomah Lumber & Box Co., Bancroft St., Portland, Ore.
 Mundhenk-Curtiss Lumber & Fuel Co., 37 W. Van Buren St., Chicago, Ill.
 North Vernon Lumber Mills, North Vernon, Ind.
 Paepcke Leicht Lumber Co., 111 W. Washington St., Chicago, Ill.
 Pantasote Co., 11 Broadway, New York, N. Y. "Vehisote," "Agasote."
 Peitch Co., F. T., 608 Superior Ave., W., Cleveland, O.
 Riel-Kadel Lumber Co. (S. Memphis), Memphis, Tenn.
 Shafer, Cyrus C., Citizens National Bank Bldg., South Bend, Ind.
 Shelp & Vandegrift, 818-83 N. Lawrence St., Philadelphia, Pa.
 Shiels & Co., Charles F., McLean Ave. & Gest St., Cincinnati, O.
 Sullivan & Co., T., 2 Arthur St., Buffalo, N. Y.
 Three States Lumber Co., Memphis, Tenn.
 Thompson-Katz Lumber Co., 3 S. Main St., Memphis, Tenn.
 Vehisote—See Pantasote Co.
 West Virginia Timber Co., Orange, Va.
 Young Lumber Co., 19 Edwards St., Binghamton, N. Y.

LUMINOUS COMPOUNDS—See **Paints**, Luminous

LUNCH BOXES—See **Hampers**, Touring

LUNCH TABLES—See **Tables**, Picnic and Lunch

LUNCHEON CASES—See **Hampers**, Touring

MACHINE BOLTS—See **Bolts**, Machine

MACHINE KEYS—See **Keys**, Machine

MACHINE SCREW TAPS—See **Taps** and Dies

MACHINE SCREWS—See **Screws**, Machine

MACHINE WORK TO ORDER

(See also **Screw Machine Products**)

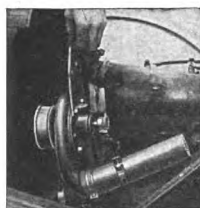
Acme Electric & Mfg. Co., 203 St. Claire St., N. E., Cleveland, O.
 Acme Mfg. Works, 660 Turk St., San Francisco, Cal.
 Adapt Machinery Co., 1624-32 S. Wabash Ave., Chicago, Ill.
 Advance Machine Co., 2700 Franklin St., Detroit, Mich.
 Aetna Brass & Bronze Co., 1631-35 E. 35th St., Cleveland, O.
 Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.
 Albany Machine & Tool Co., 1031 Broadway, Albany, N. Y.
 Alent Machine Tool Co., Rochester, N. Y.
 Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.
 Allen-Fleming Machine Works, 174-76 Ellicott St., Buffalo, N. Y.
 American Brass Products Co., Pottstown, Pa.
 American Brass & Iron Co., Detroit, Mich. (See page 205.)
 American Die & Tool Co., Reading, Pa. (See page 449.)
 American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 459.)
 American Metal Products Co., 6431-61 E.worth Blvd., Detroit, Mich. (See page 605.)
 American Metal Products Co., 671 Kinnickinnick Ave., Milwaukee, Wis.
 American Tool & Garage Co., 2056 E. Fourth St., Cleveland, O.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 American Tool, Die & Machine Co., 1114-20 E. Tenth St., Indianapolis, Ind.
 Anderson, H. S., 311-19 N. Sheridan Ave., Pittsburgh, Pa.
 Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.
 Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.
 Armstrong Machine & Tool Co., 1001 S. Washington St., Peoria, Ill.
 Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
 Ashley Machine Works, 724 University Ave., Rochester, N. Y.
 Atlas Brass Foundry Co., Columbus, O. (See page 603.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.
 Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 87.)
 Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.
 Baker Gun & Forging Co., Batavia, N. Y. (See page 605.)
 Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.
 Baum's Metal Specialties Co., 1022 Wyandotte St., Kansas City, Mo.
 Baush Machine Tool Co., Springfield, Mass. (See page 607.)
 Bayne Mfg. Co., Bushnell, Ill. (See page 669.)
 Bay State Machine & Tool Co., 30 Cypress St., Springfield, Mass.
 Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
 Beard Machine Co., L. O., 315 E. Marion St., Lancaster, Pa.
 Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.
 Bend & Sons, Ph. J., 87 Frankfort St., New York, N. Y.

Everything is listed under the **NOUN** or principal word

THE ATLAS BRASS FOUNDRY CO.

Quantity & Quality Production in Machine Work

**BRASS, BRONZE & ALUMINUM CASTINGS
BEARING BRONZES
AUTOMATIC SCREW MACHINE PRODUCTS**



ATLAS Special Circulating Pump for Fords

The fact that 90% of all high grade cars are equipped with circulating pumps is proof that this is an ideal system of cooling cars.

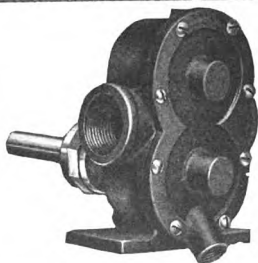
We have designed a special circulating pump for Ford Cars that greatly increases their cooling efficiency.

If you are a dealer or jobber, we have an interesting proposition to offer you.

ATLAS Standardized Bronze Geared Circulating Pump

These pumps are designed for Automobiles, Trucks, Tractors, Aircrafts and Motor Boats. If you manufacture any of these vehicles, we will gladly submit best prices in quantities.

We also manufacture Centrifugal Water Pumps for automobiles in large quantities. We are also in a position to design and build pumps to suit any requirements. Literature describing the above products will be mailed upon request.



FOLLOWING SIZES OF ATLAS CORED BARS CARRIED IN STOCK

Outside Diameter	CORE SIZES (Inside Diameter)															
1"	1/2"	3/4"	1"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"
1 1/4"	1"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"
1 1/2"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"
1 3/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"
2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"
2 1/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"
2 1/2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"
2 3/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"
3"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"
3 1/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"
3 1/2"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"
3 3/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"	7 1/4"
4"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"	7 1/4"	7 1/2"

All Bronze used is composed of 80% copper, 10% tin and 10% lead.

COLUMBUS, OHIO, U.S.A.

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Benton Harbor Engineering Works, Benton Harbor, Mich.
- Berggren & Pearson Machine Co., 211-27 Canal St., New York, N. Y.
- Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.
- Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
- Bliton Machine Tool Co., Bridgeport, Conn. (See page 625.)
- Birch & Birch, 1001-08 E. College St., Crawfordsville, Ind.
- Blair Tool & Machine Works, 531 Greenwich St., New York, N. Y.
- Blake & Johnson Co., Waterbury, Conn. (See page 833.)
- Blanchard Machine Co., 64 State St., Cambridge, Mass.
- Blass Automotive Engineering Co., Ralph, 975-85 Geary St., San Francisco, Cal.
- Blettner Co., Geo. H., 1461-45 Jackson Blvd., Chicago, Ill.
- Blickman, S., New York, N. Y. (See page 761.)
- Blum & Co., Wm., 718 S. 18th St., Newark, N. J.
- Boeger-Meyer Machine & Tool Co., 59 McWhorter St., Newark, N. J.
- Bond Machine Co., 815-25 W. Fifth St., Wilmington, Del.
- Bonney Forge & Tool Works, Allentown, Pa.
- Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
- Bourke Machine Co., 1450 21st St., Detroit, Mich.
- Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.
- Bradley Motor Co., 163 Highland Ave., Newark, N. J.
- Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
- Bremer Co., O. B., 222 Division St., Burlington, Ia.
- Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.
- Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
- Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.
- Bridgeport Engineering Co., Bridgeport, Conn.
- Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
- Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.
- Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.
- Brook, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.
- Brooks Machine Co., York, Pa.
- Bucher-Smith Co., East Liverpool, O.
- Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
- Buerk Tool Works, 33 Pearl St., Buffalo, N. Y.
- Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.
- Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.
- Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 179.)
- Burgees Machine Co., 45 Chestnut St., New Haven, Conn.
- Carpenter Mfg. Co., E. W., 515 Union Ave., Bridgeport, Conn.
- Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
- Central Machine Co., 715 Brush St., Detroit, Mich.
- Central Machine Works, 19 Church St., Worcester, Mass. (See page 611.)
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
- Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.
- Chester Die Sinking & Machine Co., Chester, Pa.
- Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.
- Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
- City Auto Repair Co., 36 Chapel St., Hartford Conn.
- City Engineering Co., Beaver Power Bldg., Dayton, O.
- Clark Engine & Boiler Co., Ranson & Clark Sts., Kalamazoo, Mich.
- Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
- Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
- Cochran Piston Corp., Detroit, Mich. (See page 709.)
- Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.
- Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.
- Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
- Coffamer Machine Works, 1214 E. 152d St., Cleveland, O.
- Columbus Auto Parts Co., 215 E. Russel St., Columbus, O.
- Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
- Conner Machine & Tool Co., 56 Harrison Ave., Springfield, Mass.
- Cotton, H. W., Woolworth Bldg., New York, N. Y.
- Craddock, Edward S., 221 E. 144th St., New York, N. Y.
- Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.
- Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.
- Cygnat Mfg. Co., 41 Perry St., Buffalo, N. Y.
- Davis Machine Co., C. F., 127-31 Andrews St., Rochester, N. Y.
- Day, Geo., 21 Haverhill St., Boston, Mass.
- De Camp & Sloan, 173 Pennington St., Newark, N. J.
- Detroit Accessories Corp., 8629 Gratiot Ave., Detroit, Mich.
- Detroit Gear & Machine Co., 646 E. Woodbridge St., Detroit, Mich.
- Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
- Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.
- Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 463.)
- Detroit Reliable Machine Co., 676 W. Grand Blvd., Detroit, Mich.
- Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.
- Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.
- Dice Machine Co., 16th & Jackson Sts., Anderson, Ind.
- Diebold Products Co., 5333-37 St. Clair Ave., Cleveland, O.
- Dimler-Hines Tool Co., Third & Canal Sts., Dayton, O.
- Diuguid Bros., 976 Atlantic Ave., Brooklyn, N. Y.
- Divine, J. Morgan, Lock Sheldrake, N. Y.

Everything is listed under the NOUN or principal word

AMERICAN METAL PRODUCTS CO.

Manufacturers of

Welded Steel Tubing and Tube Products

Hot and Cold Rolled Welded Steel Tubing

Automobile Tube Parts, Wire Conduits, Exhaust and Tail Pipes;
Coils, Bent and Swaged Tubes of All Kinds and Sizes

6431-61 Epworth Boulevard,

DETROIT, MICHIGAN

SURE. We make 'em

**Slots
Perfectly
Spaced**



**S. A. E.
or
Specials**

**WESTERN SCREW-PRODUCTS CO.
ST. LOUIS,**

PISTON PINS
PISTON RINGS
BUSHINGS
VALVES & LIFTERS

MANUFACTURERS & DISTRIBUTORS
SCREW-MACHINE PRODUCTS

GASKETS
AXLE-SHAFTS
BOLTS, SHACKLES, etc.
CONN. ROD BRGS.

Quality **Pistons** In Stock

For AUTOMOBILES, TRUCKS and TRACTORS

REGULAR AND LIGHT WEIGHT

STANDARD AND OVERSIZE

U. S. Manufacturers Sales Corp. 2110-12 MICHIGAN AVE.
CHICAGO, ILL.

BATAVIA CONTROL SETS

FOR ALL TYPES

Commercial and Passenger Car Transmissions
SPECIAL SETS BUILT TO ORDER

Descriptive Matter on Request

BAKER GUN & FORGING CO., Batavia, N. Y.

Detroit Office:
LONNEY & CARMICHAEL
4835 Woodward Ave.

San Francisco Office:
S. C. KYLE
Rialto Building

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Dodge Mfg. Co., S. Union St., Mishawaka, Ind.
 Dodge Tool Co., 721 Main St., Grinnell, Ia.
 Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.
 Dover, George W., Eddy St. & Thurburs Ave., Providence, R. I.
 Driver-Harris Co., Harrison, N. J.
 Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
 Dunham Co., Thos., Aurora, Ill.
 (See page 163.)
 Dunkirk Machine & Boiler Co., Dunkirk, N. Y.
 Dunner Machine Co., 220 Center St., New York, N. Y.
 Eagle Engineering Co., Springfield, O.
 Eagle Machine Co., 20 N. Noble St., Indianapolis, Ind.
 East Davenport Machine Co., 1108 Mound St., Davenport, Ia.
 East Moline Engineering & Mfg. Co., East Moline, Ill.
 Eastern Production Co., 136 Leib St., Detroit, Mich.
 Easton Machine Co., Central St., So. Easton, Mass.
 Eclipse Machine Co., Elmira, N. Y.
 (See page 163.)
 Elite Machine & Tool Works, 220 W. 19th St., New York, N. Y.
 Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.
 Elliott Mfg. Co., J. H., Madison & Main Sts., Bridgeport, Conn.
 Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
 Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
 Emerson Pump & Valve Co., Alexandria, Va.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Eppenbach, Wm., 231 Vernon Ave., Long Island City, N. Y.
 Eureka Tool & Machine Co., 306 Market St., Newark, N. J.
 Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
 F-S Machine Specialties, 171 Washington St., Newark, N. J.
 Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.
 Federal Tool & Machine Co., 24 Scott St., Newark, N. J.
 Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.
 Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.
 Fiber Barrel Machinery & Mfg. Co., 2516 Jane St., Pittsburgh, Pa.
 Fisher Machine & Tool Co., 102 Broadway, Buffalo, N. Y.
 Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
 Folts Mfg. & Supply Co., Hagerstown, Md.
 Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J.
 Fore River Shipbuilding Corp., Quincy, Mass.
 Forest City Machine & Forge Co., 5431 Lakeside Ave., N. E., Cleveland, O.
 Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.
 France Foundry & Machine Co., (N. Baltimore), Baltimore, O.
 Franklin Machine & Tool Co., Springfield, Mass. (See page 631.)
 Frostholt Bros., 1309 Park St., Syracuse, N. Y.
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 G-H-P Mfg. Co., 129 N. Main St., Providence, R. I.
 Geer Machine Works, Wm. E., 112 Summit Lane (East Liverpool), Liverpool, O.
 G. & G. Mfg. Co., 2126 Howard St., Detroit, Mich.
 Garrison Machine Works, 26 S. St. Clair St., Dayton, O.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Geier Co., P. A., 540 E. 105th St., Cleveland, O. (See page 561.)
 General Machine Co., 227 Eddy St., Providence, R. I.
 General Machine Works, Lamour & Prospect Sts., York, Pa.
 General Machine & Tool Co., Wildwood Ave., Jackson, Mich.
 General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.
 General Tool & Engineering Co., 2496 E. Grand Blvd., Detroit, Mich.
 Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.
 Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
 Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.
 Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Gnome Machine & Tool Co., 820 Livingston St., Elizabeth, N. J.
 Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.
 Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
 Gravity Carburetor Co., 3062 E. 93rd St., Cleveland, O.
 Green & Son, John, 221-24 N. Market St., Hoopeson, Ill.
 Greist Mfg. Co., New Haven, Conn.
 (See page 323.)
 Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.
 H. L. & W. Sales & Mfg. Co., 2755 W. Fort St., Detroit, Mich.
 H. & H. Machine Co., 4274 Easton Ave., St. Louis, Mo.
 Hall Lamp Co., C. M., Detroit, Mich.
 (See page 435.)
 Hall Switch & Signal Co., Garwood, N. J.
 Hammerlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
 Harbor Machine Co., 183 High St., Boston, Mass.
 Harley Co., Page Blvd., Springfield, Mass.
 (See pages 205 and 415.)
 Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
 Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.
 Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
 Harvey-Hanes Machine Co., 369 Ellicott St., Buffalo, N. Y.
 Hauser Machine & Mfg. Co., 232 Mill St., Rochester, N. Y.
 Hearn Machine Works, J. C., Columbus, O.
 Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.
 Hergl Mfg. Co., Bridgeport, Conn.
 Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
 Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill.
 Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.

Everything is listed under the NOUN or principal word

FYRESM

"FIRES THEM"

You can make

\$5,000.00

Easily in 1921

DEALERS

Secure the exclusive distribution for the greatest invention ever known.

*Write today for
FREE Samples*

WELLMAN-MUTER CORP.
21 E. Van Buren St.
Territory Dept. CHICAGO, ILL.

FYRESM

"FIRES THEM"



Used by
following
Mfrs.:

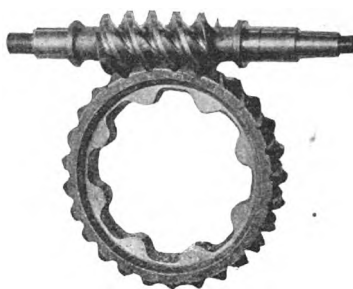
Cadillac
Winton
Stearns
White
Willys-
Overland
Kissel
Vim
and many
others

Complete Line of Standard and
Oversize Rings can be obtained at

United States Piston Ring Co.
(Hammered)

Main Office and Factory:
1206 So. Grove St., IRVINGTON, N. J.

Branch Office and Factory:
2108 Superior, N. W., Cleveland, Ohio
Send for Booklet and Price List



Baush Worm Gears

YEARS of experience,
conscientious work,
unequalled manufacturing
facilities and a most
rigid inspection have
caused the name
BAUSH when applied
to worm gears to stand
for **ACCURACY, DE-
PENDABILITY—
THE BEST.**

Our customers tell us the
fact that their axles are
equipped with **BAUSH**
worm gears furnishes a
most valuable talking
point. **EVERY BAUSH
WORM GEAR IS A
MASTERPIECE.**

Our Engineering Depart-
ment is ready to advise
you and help you solve
your worm gear problems.
Let us quote you.

BAUSH MACHINE TOOL CO.,
Springfield Massachusetts

Detroit Office:
1625 Dime Savings Bank Bldg.

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Horat & Co., Lafayette, Ind.
(See page 1035.)
- Houpt Machine Co., Harris Ave. & Main St., Long Island City, N. Y.
(See page 625.)
- Hub Engineering & Machine Co., Bound Brook, N. J.
- Hudson-Peck Machine Products Co., Real Estate Trust Bldg., Philadelphia, Pa.
- Huhn Mfg. Co., Woolworth Bldg., New York, N. Y.
- Hussey Power Parts Co., Giddings Rd., Cleveland, O.
- Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.
- Iles Mfg. Co., E. W. Shelton, Conn.
- Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
- Indiana Mould & Machine Works, 1015 S. Council St., Muncie, Ind.
- Indianapolis Tool & Mfr. Co., Indianapolis, Ind. (See page 477.)
- Industrial Electric Mfg. Co., Wayne, Mich.
- Inman Co., H. A., Newark, N. Y.
- International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.
- Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y.
- J. C. H. Automatic Machine Works, 2484 N. Fairhill St., Philadelphia, Pa.
- Jambor Mfg. Co., Milwaukee, Wis.
(See page 893.)
- Jefferson Iron Works, 548 W. Jefferson Ave., Detroit, Mich.
- Jennings Machine Works, 33 W. Fayette St., Uniontown, Pa.
- Jewelers Toolmaking Co., 220 Eddy St., Providence, R. I.
- Johnson Bronze Co., New Castle, Pa.
(See page 181.)
- Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.
- Johnson Tool Co., 197-99 Eddy St., Providence, R. I. (See page 1011.)
- Joliet Die & Tool Co., Joliet, Ill.
- Jones, Mark W., 53d St. & Lansdowne Ave., Philadelphia, Pa.
- Jost's Sons, Edmund, 58 First St., Newark, N. J.
- Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.
- Keck Mfg. Co., C., 77-79 Elm St., Cincinnati, O.
- Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
- Kell, Hock & Co., 354 Mulberry St., Newark, N. J.
- Keller Machine & Tool Co., 342 Hudson Ave., West Hoboken, N. J.
- Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 339.)
- Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.
- Kermath Mfg. Co., 5880 Commonwealth Ave., Detroit, Mich.
- Keuka Industries, Inc., Hammondsport, N. Y.
- Keyless Lock Co., Indianapolis, Ind.
- Kidder Co., R. E., 35 Herman St., Worcester, Mass.
- Kidder-Oswald Co., Dayton, O.
- Killington Machine Co., Industrial Bldg., Syracuse, N. Y.
- Klinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
- Knott Mfg. Co., Tell City, Ind.
- Kollmorgen Optical Corp., 35 Steuben St., Brooklyn, N. Y.
- Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
- Krahn Mfg. Co., 588 Clinton St., Milwaukee, Wis.
- Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
- Kremer-Cummins Machine Co., 1833 E. 55th St., Cleveland, O.
- Laclede Iron Works, 1315 Chestnut St., St. Louis, Mo.
- Ladish Drop Forge Co., Cudahy, Wis.
(See page 537.)
- Lauer Machine Co., John, 620-26 St. Antoine Lawrence & Co., L., 392 Halsey St., Newark, N. J.
- Leard Co., William, New Brighton, Pa.
(See page 311.)
- Lehigh Engineering Co., Royersford, Pa.
- Levy, Benj., 355 W. Broadway, New York, N. Y.
- Lewis Spring & Axle Co., 43 Holler St., Chelsea, Mich.
- Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
- Liberty Electric Co., 97 Haverhill St., Boston, Mass.
- Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.
- Lincoln Machine Co., 1068 Main St., Pawtucket, R. I.
- Linden & Co., Providence, R. I.
(See page 827.)
- Link-Belt Co., Indianapolis, Ind.
(See page 237.)
- Lodge & Co., 2310 S. Toga St., Philadelphia, Pa.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.
- McCadden Machine Works, 502-12 Fourth St., N. St. Cloud, Minn.
- McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
- McCulloch Mfg. Co., 316 High St., Boston, Mass. (See page 471.)
- McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- Mackenzie, A. S., 11th St. & Ridge Ave., Philadelphia, Pa.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Manufacturers Machine Products Co., 1320-68 Mt. Elliot Ave., Detroit, Mich.
- Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.
- Marf Machine Co., 17-27 Vandewater St., New York, N. Y.
- Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.
- Martini & Huneke Co. of America, 1201 Hudson St., Hoboken, N. J.
- Massnick Mfg. Co., 6911 E. Lafayette Ave., Detroit, Mich.
- Meadows Machine Works, Passaic Ave. & Lincoln Highway, Newark, N. J.
- Medina Mfg. Co., Medina, O.
- Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
- Metal Machinery Tool Co., 2176 E. 76th St., Cleveland, O.
- Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.
- Metal Products Service Co., Blackstone Bldg., Cleveland, O.
- Meyer Mfg. Co., A. J., 817-21 John St., West Hoboken, N. J.
- Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.
- Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word



Each ring is cast individually, of the highest quality gray iron, machined accurately, gauged and inspected carefully.

We carry a complete stock of all standard sizes and oversizes. Special sizes made up on short notice.

PENNSYLVANIA PISTON RING CO.

203-205 St. Clair Ave. N. E.
Cleveland, Ohio

F E L T PACKINGS

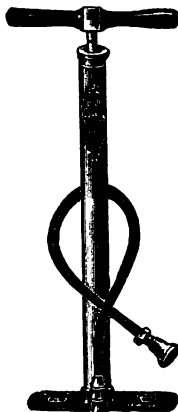
Also Leather, Rubber, Asbestos or Paper Gaskets for any mechanical purpose from all materials:

**The F. L. Sutherland
Company**

139 Beaubien St., Detroit, Mich.

The Blue Champion

**A DEPENDABLE TIRE PUMP
KNOWN THE WORLD OVER**



Sells without resistance, due to its design, workmanship, quality of materials.

**Positive Check
Valve, Plunger
Assembly and
Other Features**

We are also making the Blue Champion "Patented" Combination Grease and Oil Gun.

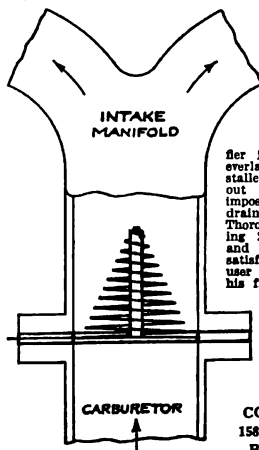
Something different and better.

*Samples Upon
Request*

Robert-Irwin Mfg. Co.
427-431 W. Broadway, New York, N.Y.

Pomeroy's Electric Gasifier For All Gasoline Engines

An exceedingly simple device consisting of a cone-shaped heating coil inserted between manifold and carburetor. The car owner himself can install it in a few minutes.



Guarantees a prompt start under all conditions; necessary in winter as well as in summer.

The Pomeroy Electric Gasifier is fool-proof and everlasting. Once installed it cannot get out of order and it imposes no excessive drain on the battery. Thoroughly tested during 2½ years of use and giving more than satisfaction. Every user recommends it to his friends.

Retail price \$5. Liberal discount to dealers.

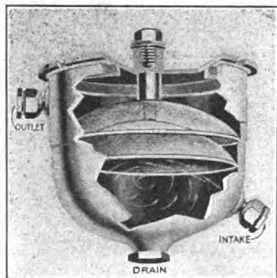
**POMEROY
ELECTRIC
COMPANY, Inc.**
158 East Main St.
Buffalo, N. Y.

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Middletown Fire Arms Specialty Co., 32 Warwick St., Middletown, Conn.
 Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.
 Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 981.)
 Milwaukee Forge & Machine Co., Milwaukee, Wis. (See page 433.)
 Milwaukee Metal Working Co., 382-88 Clinton St., Milwaukee, Wis.
 Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.
 Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
 Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.
 Modern Pattern & Machine Co., 451-53 Monroe Ave., Detroit, Mich.
 Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O. (See page 357.)
 Moore Engineering Co., Hagerstown, Md.
 Modern Tool & Machine Works, 344-50 Mulberry St., Newark, N. J.
 Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.
 Moon Machine Co., C. & O. & Hackley Sts., Muncie, Ind.
 Moran Machine Co., John T., 103-07 Grape St., Syracuse, N. Y.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
 Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.
 Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.
 Myer-Moran Co., 212 N. Holliday St., Baltimore, Md.
 National Acme Co., Cleveland, O. (See page 667.)
 National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
 National Sewing Machine Co., Belvidere, Ill.
 National Stamping & Electric Works, 410-26 Clinton St., Chicago, Ill.
 National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
 Nazareth Foundry & Machine Co., Nazareth, Pa.
 Nelson Tool Co., 782 E. 142d St., New York, N. Y.
 Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 New Process Specialty Co., 233-32 Hanover St., Milwaukee, Wis.
 Newark Engineering & Tool Co., 476 18th Ave., Newark, N. J.
 Newark Tool & Die Co., 20-22 Lawrence St., Newark, N. J.
 Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.
 Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.
 Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
 North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.
 North End Tool Co., 339 Franklin Ave., Bloomfield, N. J.
 North Wales Machine Co., Elm Ave. & Center St., North Wales, Pa.
 Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo.
 Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
 Olson & Dettie Co., 219 W. Seventh St., Sioux Falls, S. Dak.
 Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.
 Paramount Tool Co., 102 St. Clair Ave., N. W., Cleveland, O.
 Parker White Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.
 Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.
 Parts Mfg. Co., Canal & Jackson Sts., Cincinnati, O.
 Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
 Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Perfection Auto Parts Co., 410 Lakeside Ave., N. W., Cleveland, O.
 Perfection Machine Works, 16-18 Norris St., Buffalo, N. Y.
 Pfau Mfg. Co., Cincinnati, O.
 Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 147.)
 Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.
 Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
 Plum & Little, 80 N. Water St., Rochester, N. Y.
 Portland Forge & Foundry Co., Portland, Ind.
 Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.
 Power, Laurence C., 712 Cherry St., Philadelphia, Pa.
 Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.
 Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.
 Premier Mfg. Co., Sandy Hook, Conn.
 Printing Machinery Co., Cincinnati, O.
 Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
 Production Engineering Co., 212 Centre St., New York, N. Y.
 Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
 Puritan Machine Co., 422 Lafayette Blvd., Detroit, Mich.
 Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
 Recording Devices Co., 554 W. Fifth St., Dayton, O.
 Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.
 Reifsnider, A. L., 1416 Madison Ave., Baltimore, Md.
 Rex Machine & Tool Co., 24 Scott St., Newark, N. J.
 Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
 Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
 Riverside Machine Co., Front & Penn Sts., Chester, Pa.
 Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.
 Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y.
 Rockford Drilling Machine Co., Ft. of Catherine St., Rockford, Ill.
 Rome Engineering Co., 108 S. George St., Rome, N. Y.
 Rosbach Co., F. P., Benton Harbor, Mich.
 Roselle Machine & Tool Co., Roselle, N. J.
 Rosville Engineering & Machine Co., 98 13th Ave., Newark, N. J.
 Ross Machine Co., 1213-15 W. Seventh St., Lafayette, Ind.

Everything is listed under the NOUN or principal word



KLEENGAS PURIFIER

**For Automobiles
Trucks, Tractors
Motor Boats**

The Purifier allows only clean gas to reach the carburetor.

Removes all water, grit and dirt.

Prevents water lodging in jet, and frozen gasoline pipes.

Approved by leading Engineers.

Attractive Dealer Proposition Write for Full Particulars

THE NATIONAL AUTOMOTIVE MFG. CO.
822 Champlain Ave. CLEVELAND, OHIO

At Your Service

Any time you want—

WRIST PINS on a productive basis, Stampings, Screw Machine Prod, Machine Work, Dies, Tools, Jigs, Experimental Work, and all Automotive parts, on contract, then send blue prints to us.

CENTRAL MACHINE WORKS

19 Church Street WORCESTER, MASS.

FARGO MOTOR CO.

For BETTER CYLINDER AND CRANKSHAFT REGRINDING

Manufacturers of

PISTONS, RINGS and WRIST PINS

For All Makes of Cars

1162-1164 W. 22nd STREET, CHICAGO, ILL.

BAKER

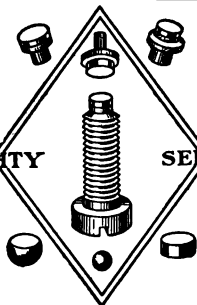
Platinum

IRIDIO-PLATINUM RIVET
COMPOSITE CONTACTS
AND WELDED SCREWS

BAKER & CO., INC.

QUALITY

SERVICE



BAKER

Contacts

Send for Platinum Contacts Book
**SCRAP PLATINUM
PURCHASED**

NEWARK, N. J.

New York Office: 30 Church Street

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Ross Machine Co. (Wollaston), Quincy, Mass.
 Ryan, L. M., 323 St. John St., New Haven, Conn.
 S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
 "S-C" Regulator Co., Perry & High Sts., Fostoria, O.
 S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
 Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
 Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
 Schaefer Mfg. Co., Pearl St., Berlin, Wis.
 Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.
 Schickel Motor Co., 55 Garden St., Stamford, Conn.
 Schroeder Bros. Mfg. Co., 102 Brook St., Torrington, Conn.
 Scientific Machine & Tool Corp., 57-59 Jay St., Brooklyn, N. Y.
 Seavill Mfg. Co., Waterbury, Conn.
 (See page 831.)
 Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.
 Security Tool Works, 115-17 S. Clinton St., Chicago, Ill.
 Selik Bros., 2532 24th St., Detroit, Mich.
 Selas Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
 Shields Machine Co., Whitney Power Bk., Cleveland, O.
 Shimer & Sons, Samuel J., Milton, Pa.
 Shipman Machine Co., 218 Summer St., Boston, Mass.
 Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 477.)
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
 Simplex Tool Co., Social St., Woonsocket, R. I.
 Slocumb & Co., F. F., 14th & Poplar Sts., Wilmington, Del.
 Smith Mfg. Co., Philip, Sidney, O.
 Smith & Co., E. M., Peoria, Ill.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.
 Specialty Products Co., 494 Mulberry St., Newark, N. J.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
 Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.
 Stafford Machine Works, 2201-05 Campbell Ave., Kansas City, Mo.
 Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.
 Standard Separator Co., 45th St., & Burnham Rd., Milwaukee, Wis.
 Star Tool & Mfg. Co., 4520 Lexington St., Chicago, Ill.
 Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.
 Steber Machine Co., 713 First St., Utica, N. Y.
 Steele & Condit, 74 Pearl St., Jersey City, N. J.
 Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.
 Steger & Sons, Plano Mfg. Co. (Industrial Division).
 Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
 Sterling Tool & Machine Co., 205-09 W. 19th St., New York, N. Y.
 Stiles Mfg. Co., St. Louis, Mo.
 (See page 527.)
 Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill.
 Superb Mfg. Co., Monticello, Ind.
 Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.
 Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.
 Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
 T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.
 Taft-Pierce Mfg. Co., Woonsocket, R. I.
 Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O.
 Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
 Textile Machine Works, Reading, Pa.
 Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
 Tisch Machine Tool & Die Works, 453-54 Spring St., Elizabeth, N. J.
 Tool & Machine Products Co., Waldo St., Newark, O.
 Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
 Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 331.)
 Traylor Engineering & Mfg. Co., Cornwells, Pa.
 Triangle Tool of Erie Co., 162 E. Eighth St., Erie, Pa.
 Truck Parts & Foundry Co., Alma, Mich.
 Twin City Die & Tool Works, 4522 Sixth Ave., Rock Island, Ill.
 U. S. Axle Co., Pottstown, Pa.
 (See page 87.)
 Ultimate Machine Works, 209 Centre St., New York, N. Y.
 Unger Bros., Newark, N. J.
 Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
 United Machine Works, 55-57 W. Third St., New York, N. Y.
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 Up-To-Date Machine Works, 2915 Washburn Ave., Chicago, Ill.
 (See page 827.)
 Vahan Products Co., E. 73d St. & St. Clair Ave., N. W., Cleveland, O.
 Van Brass & Specialty Co., 3249 W. Ohio St., Chicago, Ill.
 Varick Machine & Tool Works, 143 Varick St., New York, N. Y.
 Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
 Vulcan Brazing & Machine Co., 2126-28-30 Race St., Philadelphia, Pa.
 (See page 739.)
 Walker Co., H. J., 131st St. & Taft Ave., Cleveland, O.
 Walsh & Allen, 15 Wilbur Ave., Long Island City, N. Y.
 Ware Bros., Automatic Products, 234 N. Ada St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Castings Co., Railroad Hill St., Waterbury, Conn.
 Watkins Nut Co., 2013 Franklin St., Detroit, Mich.
 Wayne Works, 16th & North F Sts., Richmond, Ind.
 Weber & Scher Mfg. Co., 24 Scott St., Newark, N. J.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 263.)
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)

Everything is listed under the NOUN or principal word

KANT-SKORE PISTONS

The new and sensational Aluminum Piston that can be set at a total clearance of one-thousandth and positively guaranteed that they will not "SEIZE" "SCORE" "PUMP OIL" or "SLAP."

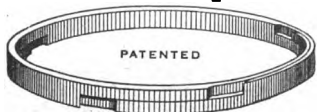
The Piston that produces results for which aluminum was originally designed.

A trial order will convince you.

Manufactured for all STANDARD makes of cars in standard and over-sizes up to and including .050 in steps of .005.

The Kant-Skore Piston Co.
520 Mutual Life Bldg., BUFFALO, N. Y.

MILES One-Piece Triple Seal



Piston Ring

*The Perfect Piston Packing—
One-Piece, Concentric
Uniform Wall Pressure*

The ONE, one-piece piston ring with an expanding feature other than depending on the tensile strength of the iron; made CONCENTRICALLY to fill groove, preventing oil accumulation and deposit of carbon. UNIFORM and PERMANENT PRESSURE against cylinder wall. Accurately machined to fit cylinder for which intended, and needs no hand filing or fitting to install. Complete stock carried in 26 principle cities. Write for nearest distributors' address.

MILES PISTON RING CO.
CHICAGO, ILL.

We Represent the
Manufacturers of



IGNITION SYSTEMS

PEDRICK TRUE-FIT PISTON RINGS

Ignition,
Starting and
Lighting
Cables



Ford
Assemblies
and Spark
Plug Wires

We have room for a few more good sub-distributors and service stations in Pennsylvania, New Jersey, Delaware, Maryland, Virginia and District of Columbia. Write us to-day.

McCARTHY BROS. & WILSON, Inc.
2220 Chestnut Street Philadelphia



A SPARK PLUG THAT IS DIFFERENT

The Kahn Globe Spark Plug is backed by more than implied promises or stories of what it will do. No plug has ever been subjected to the severe tests that this plug had to meet before it was placed on the market. On land, sea, and in the air, from single cylinder half horse stationary engines up to the gruelling tests of airplane service, this plug was tried and proven better.

This Plug Sells Itself

It's the only plug on the market that has directions for installing. Those directions sell the plug, for there must be a saving in gas and a more smoothly running engine before the plugs will work right.

Jobbers—Dealers—Get our proposition. It puts Spark Plug selling on a different basis.

KAHN MFG. CO.
MILWAUKEE WISCONSIN

MACHINE Work to Order (Continued)

Western Pump Co., 428 Third St., Davenport, Ia.
 Western Reserve Mfg. Works, 3710 E. 93rd St., Cleveland, O.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Whitley Co., A. H., 209 Cranston St., Providence, R. I.
 Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
 White Mfg. Co., Goshen, Ind.
 Whiting & Comstock, Hartford, Conn.
 Wicaco Screw & Machine Works, Seventh & Wood Sts., Philadelphia, Pa.
 Wilco Co., 172 Griswold St., Detroit, Mich. (Distributors.) (See page 207.)
 Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 83.)
 Wilton Machine Tool Co., 84 Linden Pk. St., Boston, Mass.
 Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)
 Woods Engineering Co., 108 E. Patterson St., Alliance, O.
 Worcester Job Shop, 21 Cypress St., Worcester, Mass.
 Wright Machine Co., 321 E. Second St., Owensboro, Ky.
 York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
 Young & Franklin, Industrial Bldg., Syracuse, N. Y.
 Zacharias, Edwin H., 121 Washington St., Reading, Pa.
 Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.
 Zarem & Rose, 174 Centre St., New York, N. Y.
 Zelfang Machine Co., 335 Linwood Ave., Niagara Falls, N. Y.
 Zuhr, Henry, 300 William St., New York, N. Y.
 Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

MACHINERY, Dealers in

(Comprising only Dealers in Machinery who advertise in this Publication)

Fairbanks Co., New York, N. Y.
 (See pages 619 to 622.)

MACHINERY DESIGNERS—See Designers, Special Machinery and Tool

MACHINERY SPRINGS—See Springs, Machinery

MACHINES, AIRPLANE STRUT FORMING—See Lathes, Airplane Strut

MACHINES, Aircraft Propeller Blade Shaping

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O. "Lightning."
 Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y.

Lightning—See Fay & Egan Co.
 Mattison Machine Works, Rockford, Ill.

MACHINES, Aircraft Propeller Hub Boring

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

MACHINES, Aircraft Propeller Toothing

Whitney & Son, Baxter D., Winchendon, Mass. (See pages 467 and 841.)

MACHINES, Aircraft Wire Wrapping

Edstrom Machinery Co., Cary, Ill.
 (See page 817.)

MACHINES, Autogenous Welding

(Oxy-Acetylene Welding Apparatus)

Admiral Welding Machine Co., 1605 Locust St., Kansas City, Mo.
 American Welding Co., St. Louis, Mo.
 Ashton, Laird & Co., 603-07 W. 43d St., New York, N. Y. "Astra."
 Astra—See Ashton, Laird & Co.
 Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
 Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O.
 Buckeye—See Macleod Co.
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 171.)
 Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 Economy Welding Machine Co., 2007 Central St., Kansas City, Mo.
 Erie Welding Equipment Co., Mill Rd., Hamiltion, O.
 Eveready—See Oxweld Acetylene Co.
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 General Welding Co., 355-57 14th St., Hoboken, N. J. "Ideal."
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Havens Bros. Mfg. & Supply Co., 1623 Wasee St., Denver, Colo.
 Henderson-Willis Welding & Cutting Co., 2205 N. 11th St., St. Louis, Mo.
 Ideal—See General Welding Co.
 Imperial Brass Mfg. Co., 1334 W. Harrison St., Chicago, Ill. (See page 177.)
 Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.
 MacLeod Co., 2222 Bogen St., Cincinnati, O. "Buckeye."
 Meco—See Modern Engineering Co.
 Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metals Welding Co., 4400 Perkins Ave., Cleveland, O.

Everything is listed under the NOUN or principal word

MULTIBESTOS BRAKE LINING



The Multibestos Dimension Booklet, showing sizes and specifications of brake and clutch linings used on all cars, will be sent FREE on request

YOU play safe when you line brakes with Multibestos. Your judgment is backed by America's foremost automotive engineers (see Multibestos factory equipment list below).

Multibestos—with its famous interlocking weave, long-fibred asbestos and sturdy wire strands—has proved equal to the severest tests of car and truck manufacturers. It gives longest wear—greatest safety.

Multibestos is proof against oil, dirt, grease or water. Will not burn or char under heat developed by friction. Won't slip or swell when wet. Pliable; easy to apply; won't pull away from the rivets.

Both you and your customers will prefer Multibestos. Convince yourself. Give Multibestos a trial.

MULTIBESTOS COMPANY

Walpole, Mass., U. S. A.

CHICAGO
1430 Michigan Ave.

CHATTANOOGA
Eightth & Broad Sts.

SAN FRANCISCO
1835 Polk St.

NEW YORK
105 W. 63rd St.
(West of Broadway)

KANSAS CITY, 3104 Tracy Ave.



MULTIBESTOS is factory equipment on the following:

PASSENGER CARS					
Beggs	Milburn Elec.	Armleder	Hall	Selden	G-O
Biddle	Mitchell	Atco	Hendrickson	Seneca	Hart-Parr
Birch	Moore	Atterbury	Hewitt-Ludlow	Service	Illinois Super Drive
Briscoe	Noma	Available	Huffman	Signal	Indiana
Chandler	Olympian	Beaver	Independent	Standard ✓	Liberty
Cleveland	Pan-American	Brockway	Jackson	Standard Oil	Massey-Harris
Columbia	Piedmont	Buffalo	Kalamazoo	Company of Ohio	Moline-Universal
Commonwealth	Pierce-Arrow	Capitol	Kelly-Springfield	Sterling	Monarch
Crow-Elkhart	Re Vere	Clydesdale	Kissel Freighter	Studebaker	National
Cunningham	R & V Knight	Collier	Kleiber	Sullivan	Parrett
Daniels	Saxon	Concord	Lippard-Stewart	Super	Samson
Detroit-Elec.	Seneca	Conestoga	Luedinghaus	Texas	Waterloo Boy
Dixie	Shaw	Dart	Mack	Tiffin	AXLES
Dodge Bros.	Simplex	Day-Elder	Master	Tower	Eaton
Dorris	Standard	Dearborn	Maxwell	Twin City	Peru
Hanson	Stanley	Dependable	Menges	Watson	Spacke
Haynes	Studebaker	Detroit	Menominee	Wilcox Trux	Standard
Hupmobile	Vellie	Diamond T	Mutual	TRACTORS	Timken-Detroit
Jones	Westcott	Dodge Bros.	National	Avery	Torbenon
Jordan	TRUCKS	Federal	Netco	Bailor	Vulcan
Liberty	Acason	Ford	Norwalk	Boring	Wisconsin
Maibohm	Acc	Gabriel	O-K	Chase	MOTORCYCLES
Marmon	Acme	Garford	Oneida	Dauch	Excelsior
Maxwell	All Power	G-M-C	Packard	Emerson-	Harley-Davidson
McFarlan Six	American	Giant	Parker	Brantingham	
McLaughlin	La France	Hahn	Pierce-Arrow		
			Rainier		

Please mention The Automobile Trade Directory

MACHINES, Autogenous Welding (Continued)

Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.

Modern Engineering Co., 23rd & Walnut Sts., St. Louis, Mo. "Meco."

Nev-O-Fail—See Turner Brass Works.

Never-Flash—See Torchwell Equipment Co.

Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill. "Eveready."

Oxy-Carbi Co., 398 George St., New Haven, Conn.

Rego—See Bastian-Blessing Co.

Rego—See Universal Oxygen Co.

Russ Co., A. E., Cleveland, O.

Saylor Co., F. A., 3271-73 Woodland Ave., Philadelphia, Pa.

Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 635.)

Schemmel Welding Machine Works, Wapakoneta, O.

Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.

Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.

Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.

Tolman Mfg. Co., 1921 W. Third St., Boston, Mass.

Torchwell Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Never-Flash."

Turner Brass Works, Sycamore, Ill. "Nev-O-Fail." (See page 177.)

United States Welding Co., 120 N. First St., Minneapolis, Minn.

Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."

Vulcan Braising & Machine Co., 2120-28-30 Race St., Philadelphia, Pa. (See page 739.)

Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

Weldrite Co., 100-04 Hunter Ave., Long Island City, N. Y.

MACHINES, AUTOMATIC SCREW—See Machines, Screw

MACHINES, Balancing

(For Balancing Wags—See Wags, Balancing)

Akimoff—See Vibration Specialty Co.

Carwen—See Lippencott-Carwen Corp.

Lippencott-Carwen Corp., Erie Ave. & Richmond St., Philadelphia, Pa. "Carwen."

Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.

Vibration Specialty Co., Harrison Bldg., Philadelphia, Pa. "Akimoff." (See page 617.)

MACHINES, BAND SAWING—See Saws, Band

MACHINES, BANDAGE WRAPPING—See Machines, Tire Bandage Wrapping

MACHINES, BEADING—See Machines, Crimping

MACHINES, BEARING REAMING—See Reamers, Main Bearing and Connecting Rod for Rods.

MACHINES, Blue Printing

Wagenhorst Co., J. H., Dollar Bank Bldg., Youngstown, O.

Wickes Bros., 2501 Water St., Saginaw, Mich.

MACHINES, Body Rubbing

Brown—See Franklin Products.

Franklin Products, 1052 S. Clinton St., Syracuse, N. Y. "Brown."

MACHINES, Boring

(Horizontal)

Beaman & Smith Co., 30 Gordon Ave., Providence, R. I.

Cleveland Machine Tool Works, 3215 Superior Ave., Cleveland, O.

Conradson Machine Tool Co., Ninth & State Sts., Green Bay, Wis.

Giddings & Lewis Machine Tool Co., 142 Doty St., Fond du Lac, Wis.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Kriesel—See Mill City Co.

Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O. "Precision."

Mill City Co., Minneapolis, Minn. "Kriesel."

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Precision—See Lucas Machine Tool Co.

Rockford Drilling Machine Co., Foot Catherine St., Rockford, Ill.

Universal Boring Machine Co., 30 Tower St., Hudson, Mass.

MACHINES, Boring

(Vertical)

Baker Bros., Westlake Ave. & Post St., Toledo, O.

Beaman & Smith Co., 30 Gordon Ave., Providence, R. I.

Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn.

Cincinnati Planer Co., 3120 South St. (Oakley), Cincinnati, O.

Colburn Machine Tool Co., 1038 Ivanhoe Rd., Cleveland, O.

Conradson Machine Tool Co.—See Ryerson & Son.

Foot-Burt Co., 4101 St. Clair Ave., Cleveland, O.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Hofer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.

Hole-Hog—See Moline Tool Co.

King Machine Tool Co., Winton Place St., Cincinnati, O.

La Pointe Machine Tool Co., Hudson, Mass.

Moline Tool Co., 319 20th St., Moline, Ill. See "Hole-Hog."

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

Everything is listed under the NOUN or principal word



Prevents Broken Lenses

Lenses do not touch metal. All vibration and shock absorbed by soft, live rubber of

FLEXO

Lens Protectors

Protectors with licensed, registered lenses, upper half sand blasted, \$3.00 a pair, retail. Make lamps water-tight. Used everywhere by owners of large truck fleets and moderate priced cars.

Liberal dealer proposition

Flexo Lens Protector Co., Camden, N. Y.



Vibration Reduces Efficiency

Whenever the rotating parts of any machine are out of balance, there is a decrease in the efficiency of that machine.

PERFECT STATIC and DYNAMIC BALANCE can be insured by the use of the **NWA BALANCING MACHINE**.

This is of special interest to automotive manufacturers, as it is imperative that crankshafts and flywheels be perfectly balanced to avoid annoying vibrations.

Any vibratory problem solved correctly by our corps of experts, under direction of Mr. N. W. Akimoff.

VIBRATION SPECIALTY CO.
Harrison Bldg., Philadelphia, U. S. A.

American Piston & Machine Co.

Detroit, Mich.

Manufacturers of Quality Pistons, Regulars and Overlines for Replacements for

Ford, Dodge, Chevrolet, Buick D-45, Buick E-45, Cadillac, Maxwell, Continental 3 1/4" and 3 1/2", Oakland 6, Oldsmobile 6 and 8, Studebaker 3 1/2" and 3 3/4".

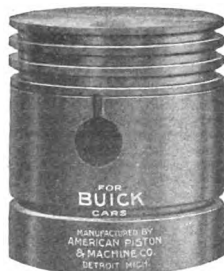
AUTOMOBILES

Made of high-grade semi-steel without flaws, carefully machined to exact dimensions and very finely finished. Only first-class workmanship and material employed.

Write for Prices and Terms.

AMERICAN PISTON & MACHINE CO.

542-548 Garfield Avenue, Detroit, Michigan




RIVETS, AND ESCUTCHEON PINS
IRON, BRASS, COPPER, GERMAN SILVER, ALUMINUM
HAVE BEEN MAKING THEM RIGHT SINCE 1850
JOHN HASSALL INC. CLAY & OAKLAND STS., BROOKLYN, N. Y.

Please mention The Automobile Trade Directory

MACHINES, BOW DRESSING—See Machines, Top Bow Dressing

MACHINES, Brake Band Riveting

(For Brake Band Riveting Jigs—See Machines, Brake Band Riveting)

Hinckley-Myers Co., Water St., Jackson, Mich.

MACHINES, Brake Band Riveting for Fords

(For Brake Band Riveting Jigs—See Machines, Brake Band Riveting)

Hinckley-Myers Co., Water St., Jackson, Mich.

MACHINES, Broaching

American Broach & Machine Co., 415 W.

Huron St., Ann Arbor, Mich.

Broach Well—See Velco Mfg. Co.

Connecticut Broach & Machine Co., 376 Bank St., New London, Conn.

La Pointe Co., J. N., New London, Conn.

Lapointe Machine Tool Co., 34 Tower St., Hudson, Mass.

Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.

Velco Mfg. Co., 305 Wells St., Greenfield, Mass.

"Broach Well."

MACHINES, Burning-In for Fords

Allred—See Sutton Auto Co.

American—See Fairbanks Co.

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)

Danielson Tool Co., Fulton St., Wausau, Wis.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Ia.

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Miles Mfg. Co.—See Zinke Co.

Nazett Mfg. Co., 1440 Washington St., Eldora, Iowa.

Phoenix Mfg. Co., Eau Claire, Wis.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Products Co., Greenawalt Bldg., Springfield, O.

Service Station Equipment Co.—See Fairbanks Co.

Sutton Auto Co., C. R., 211-13 Buchanan St., Greensboro, N. C. "Allred."

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

MACHINES, BUTTON—See Machines, Upholstery Button

MACHINES, CALCULATING—See Machines, Adding and Calculating

MACHINES, Cam Cutting

Standard Machinery Co., Auburn, N. I. (See page 135.)

MACHINES, CARBON BURNING—See Machines, Engine Decarbonizing

MACHINES, CHAIN REPAIR—See Tools, Tire Chain Repairs

MACHINES CHAMFERING—See Machines, Gear Tooth Chamfering

MACHINES, Crimping and Beading

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pettingall Machine Co., 77 Elm St., Amesbury, Mass.

Pexto—See Peck, Stow & Wilcox Co.

Quickwork Co., Celina Rd., St. Marys, O.

MACHINES, CYLINDER GRINDING—See Grinders, Cylinder

MACHINES, CYLINDER REGRINDING—See Grinders, Cylinder

MACHINES, DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, Cylinder Reboring

(See also Machines, Boring; also Bore, Boring; also Tools, Portable Cylinder Boring)

Baker Bros., Westlake Ave. & Post St., Toledo, O.

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Fairbanks Co., New York, N. Y. (Sole Distributors for Foote-Burt Co., Cleveland, O.) (See pages 619 and 622.)

Foote-Burt Co.—See Fairbanks Co.

Marvel Machinery Co., Minneapolis, Minn. (See pages 623 and 717.)

Mill City Co., Minneapolis, Minn.

Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 623.)

MACHINES, Die Cutting

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.

Hergi Mfg. Co., Bridgeport, Conn.

Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y.

MACHINES, Double Tread Tire Stitching

Boasworth Machinery Co., Campbell, 206 Lincoln St., Boston, Mass.

Landis Machine Co., 1515-27 N. 25th St., St. Louis, Mo.

MACHINES, DRESSING—See Machines, Top Bow Dressing

MACHINES, DRILLING—See Drills

Everything is listed under the NOUN or principal word

FAIRBANKS

Automobile Repair Equipment



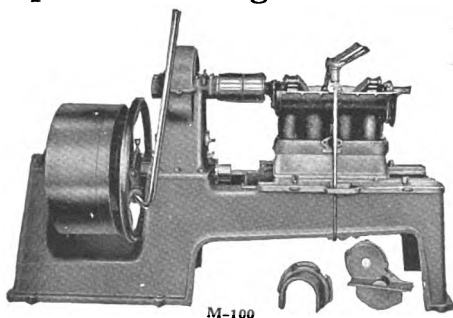
Fairbanks' Worth

Automobile repairing has developed to such an extent that modern and efficient tools are absolutely essential in the up-to-date repair shop. New tools and devices, well designed, and offering guaranteed service, mean repeat orders for the dealer and satisfied customers for the repair man. In these pages you will find some of the popular items in the Fairbanks line—a line which is recognized as the standard throughout the world.

And the Fairbanks line is progressive. It is being increased constantly. The new devices have been tested and approved by experts and when they put their "O. K." on a product, the Fairbanks Company is willing to guarantee it as a real time and labor saver, with its own well-known "O. K."

The Ford and Fordson Special Burning-In Machine

The Ford and Fordson Special Burning-in and Running-in machine is built to stand the test of time and hard usage. A base of one solid casting, a low center of gravity, split bronze bearings and Hyatt roller bearings are all features which insure a satisfactory job.



By means of a $3\frac{1}{2}$ to 1 gear reduction the bearings may be burned-in at a speed of 175 R. P. M., while the speed for running-in with oil is increased to 600 R. P. M. Experiments and tests have proved that these are the best speeds for perfect work.

One of the main advantages of the Ford and Fordson Special is the fact that the repair man has full view of the operation while the main and connecting rod bearings are being burned-in. After this is completed the motor block is turned and the bearings, connecting rods and pistons are run-in with oil.

STANDARD OF THE WORLD



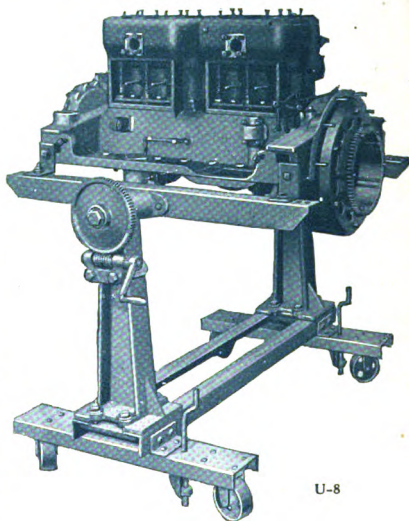
FAIRBANKS

Automobile Repair Equipment

Universal Motor Stand

The Fairbanks Universal Motor Stand handles motor blocks of any type with ease. The blocks may be adjusted to any position and secured in that position.

The Universal Motor Stand is made to take all sizes or makes of auto and auto-truck motor blocks, having either three point or four point suspension. The leg brackets move in and out to increase or decrease the distance to fit any motor. The stand is fitted with worm wheel drive, making it possible to place the motor in any required position. It is substantially constructed of angle iron and well riveted throughout. Cast iron brackets support the side members. Four casters permit the stand to be moved easily to position desired, and two lock screws elevate the corners.



U-8

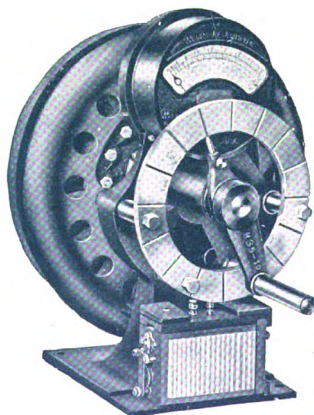
Coil Unit and Magneto Test Stand

The Coil Unit and Magneto Test Stand (M-35) is designed to test and facilitate the adjustment of the coil units and the magneto. It consists of a coil testing apparatus which is a two ampere model, 156 ammeter, a Ford magneto provided with a crank and rotating spark gap, and a device for clamping the coil unit in place and at the same time making the necessary electrical connections. For this test the magneto ammeter and primary of the coil unit are connected in series. The coil secondary is connected across the rotary spark coil.

When the magneto is revolved the ammeter shows the primary current flowing. Seven-eighths of the number of sparks produced by the passage of the magneto poles in front of the coils per one-sixteenth of a revolution may be counted by watching the rotating spark gap as it passes over the graduated dial. This dial is graduated into 16 parts, the magneto having 16 poles. One good spark should pass over each one-sixteenth revolution of the crank and the current indicated by the ammeter should be between 1.2 and 1.4 amperes.

To test the magneto in the car, one terminal of the ammeter is connected to the magneto terminal through an impedance coil and the other terminal is connected to the crank case. With the impedance coil used the meter should indicate 0.8 or more amperes when the engine runs at a moderate speed.

The function of the impedance coil is to cause the indications of the instrument to be substantially independent of the engine speed.

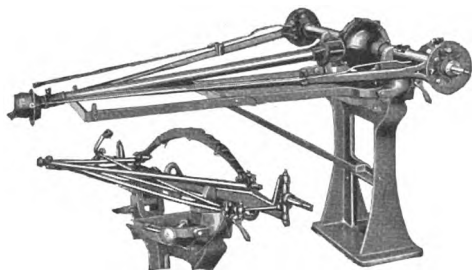


M-35

STANDARD OF THE WORLD

FAIRBANKS

Automobile Repair Equipment



M-14

Dixie Combination Front and Rear Axle Stand

The Dixie is a well-designed device for supporting the front and rear axle while overhauling. This stand is equipped with two vises, one tipping to the side to make the axle housing accessible for the removal of the roller bearing sleeve, and the other turning on a spindle to permit the easy removal of

the differential and axle shaft. A heavy cast iron removable grease pan is provided to catch the grease and oil from the disassembled differential.

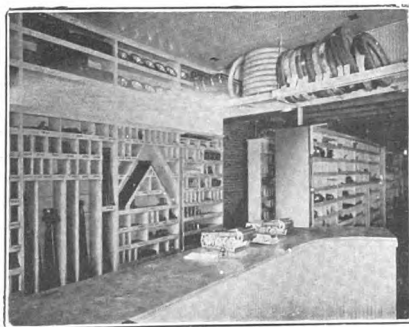
The Dixie Stand has proved very efficient in repair shops. The rear axle can be placed in any position, and the tool tray and axle shaft support can be neatly folded when not in use and can be left until the entire operation is complete.

Make Your Stock Room a Display Room

Fairbanks Servistock units are made in sizes to hold parts stocks of \$5,000, \$25,000 and \$50,000, with supplements for truck and tractor parts.

The bins bear the numbers of parts contained therein and are arranged in numerical order, irrespective of the size or shape of the part.

The Servistock Units can be supplied in either wood or steel. Either style will add to the attractiveness and pulling power of any Service Station, and at the same time will save labor. Everything is at the finger tips of the salesman and in sight of the customer. This system is also an excellent indicator of stock depletion.



S-1 TO S-7

STANDARD OF THE WORLD

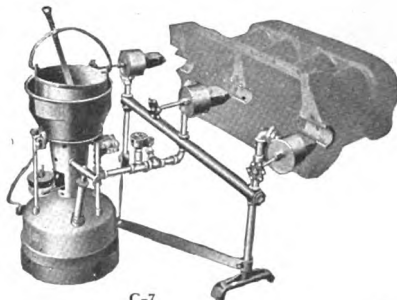
FAIRBANKS

Automobile Repair Equipment

Save Time and Labor on Rebabbiting Jobs

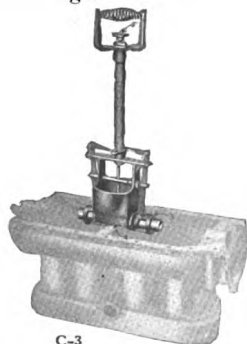
Your profits increase as your time and labor decrease. We can show you how to save time and labor on rebabbiting jobs.

First you must remove the old babbitt from the block. This is easily accomplished with the four way torch, which melts and removes the old bearings and at the same time melts the babbitt for the new bearings.



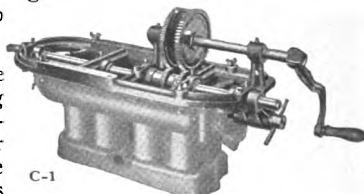
C-7

Next fill the ladle-jig with the molten babbitt. Place it over the bearing and give the handle a quarter turn to give it its exact position. Then lift the plunger in the handle and the hot metal will flow into the bearing from both sides at once—the correct way to do it.



C-3

Now place the Bearing Boring Machine in position on the motor block and bore the bearings. This



C-1

machine bores all three bearings at one time, insuring accurate alignment and a perfect fit of the crankshaft. Simple, isn't it? That is characteristic of all Fairbanks Repair Equipment.

Watch for the "Fairbanks O. K." on all repair equipment.

EXCLUSIVE SALES AGENTS

THE FAIRBANKS COMPANY

Administrative Offices—NEW YORK

Albany
Baltimore
Birmingham
Boston
Bridgeport
Buffalo

London, Eng.
Kingston, Jamaica

Chicago
Cleveland
Detroit
Hartford
Newark
New Orleans

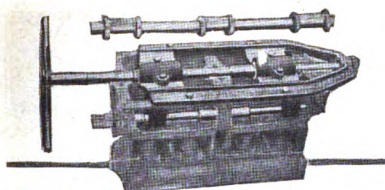
New York
Paterson
Philadelphia
Pittsburgh
Providence
Rochester

Birmingham, Eng.
Paris, France

Scranton
St. Louis
Syracuse
Tulsa
Utica
Washington

Glasgow, Scotland
Hamburg, Germany

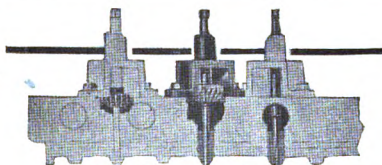
STANDARD OF THE WORLD



The Storm Main Bearing Sabbiting and Boring Tool for Ford and Fordson Motors—puts in new, perfect bearings exactly the same as the original and in the proper position.

STORM

MOTOR REPAIR EQUIPMENT



STORM MOTOR REPAIR EQUIPMENT

The Storm Valve Port Renewing Tool puts in a complete valve system—removes the old, wide, irregular face—enlarges the port and produces a new, narrow seat and accurate steam guide. Write for catalog.

STORM MANUFACTURING COMPANY

Department L Minneapolis, Minn.

Announcement

In addition to our

3 PIECE PISTON RINGS

we can now also supply you with

Step-Joint Rings

OF SUPERIOR QUALITY

These rings are uniformly soft throughout—have the proper tension—and can be depended on to give enduring service.

Keys Piston Ring Co.

3020 Olive Street, St. Louis, U. S. A.

MARCO

"The Piston Supreme"



Built without weak points. Reinforced beneath head and around boss. Built extra strong to resist wear and stress. Made of super quality grey iron. A piston that is as light as practical yet as strong as necessary.

Gives indefinite service. Backed by dependable organization.

Furnished in the rough, semi-finished or finished to standard over sizes .020, .031, .046, .062. Prompt shipments. Immediate service. Patterns for 2,500 makes and models of internal combustion engines.

Be
Sure to Write
Direct to Dept.
of Piston
Sales

DESKS:

616 So. Michigan Ave., Chicago, Ill.

MARVEL MACHINERY CO.
Minneapolis, Minn.

Please mention The Automobile Trade Directory

MACHINES, Electric Tire Buffing

Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."
 Johnson—See U. S. Electrical Mfg. Co.
 Strand & Co., N. A., 549 W. Washington St., Chicago, Ill.
 U. S. Electrical Mfg. Co., Third and Central, Los Angeles, Cal. "Johnson."
 (See page 469.)
 Willey—See Clark, Jr., Electric Co.

MACHINES, Electric Welding

Agnew Electric Welder Co., Milford, Mich.
 Arc Welding Machine Co., 525 W. 45th St., New York, N. Y.
 Electric Arc Cutting & Welding Co., 152-58 Jelliff Ave., Newark, N. J.
 Federal Machine & Welder Co., Dana Ave., Warren, O.
 General Electric Co., Schenectady, N. Y.
 (See page 779.)
 Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis.
 (See page 935.)
 Gibb Instrument Co., 348 Palmer Ave., E., Detroit, Mich. "Zeus."
 Lincoln Electric Co., 38th St. & Kelley Ave., N. E., Cleveland, O.
 Taylor Welder Co., Warren, O.
 (See page 1009.)
 Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass.
 Wilson Welder & Metals Co., 253-36th St., Brooklyn, N. Y.
 Winfield Electric Welding Machine Co., Warren, O. (See page 1009.)
 Zeus—See Gibb Instrument Co.

MACHINES, Engine Decarbonizing

(Oxygen carbon burning outfits; for Chemical Carbon Removers—See Compounds, Carbon; for Oil or Ball Removers—See Removers, Carbon; for Steam Carbon Removers—See Moliniers, Air or Mixture)

Ashton, Laird & Co., 603-07 W. 43rd St. New York, N. Y. "Astra."
 Astra—See Ashton, Laird & Co.
 Auto Gas Light Co., Hazleton, Pa. "M-E."
 Bateman Bros., 419 E. Bank St., Centerville, Ia. "O-So-Easy."
 Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O. "Eureka."
 Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.
 Champion—See Cleveland Faucet Co.
 Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland O. "Champion."
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 171.)
 Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 Eureka—See Bishop & Babcock Co.
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 Ferrier Mfg. Co., G. F., 231 S. Euclid Ave., Pittsburgh, Pa.
 General Welding Co., 355-57 14th St., Hoboken, N. J. "Novel."
 Henderson-Willis-Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.

M-E—See Auto Gas Light Co.
 Novel—See General Welding Co.
 O-So-Easy—See Bateman Bros.
 Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.
 Prest-O-Carbon—See Prest-O-Lite Co.
 Prest-O-Lite Co., 1400 Speedway, Indianapolis, Ind. "Prest-O-Carbon."
 Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (See page 177.)
 Stay-lit—See Torchweld Equipment Co.
 Superior Oxy-Acetylene Machine Co., 1103 E. High St., Hamilton, O.
 Tolman Mfg. Co., 19-21 W. Third St., Boston, Mass.
 Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Stay-lit."
 United States Welding Co., 120 N. First St., Minneapolis, Minn.
 Vulcan Brazing & Machine Co., 2126-28-30 Race St., Philadelphia, Pa.
 (See page 739.)
 Vullite Chemical Co., 8 Sears St., Boston, Mass.
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

MACHINES, Fender Rolling

Cleeso—See Cleesattel & Sons.
 Cleesattel & Sons, Wm., 157-61 Walden Ave., Buffalo, N. Y. "Cleeso."
 Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FENDER STRAIGHTENING—
See Tools, Fender Straightening**MACHINES, Fender Wiring**

Magee Sheet Metal Machinery Co., 728 Vermont Ave., Detroit, Mich.
 Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FIGURING— See Machines, Adding and Calculating**MACHINES, Gear Cutting**

Bligram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 625.)
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Cincinnati Gear Cutting Machine Co., Elm St. & Garrard Ave., Cincinnati, O.
 Fellows Gear Shaper Co., 24 Pearl St., Springfield, Vt.
 Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.
 Lees-Bradner Co., 6210 Carnegie Ave., Cleveland, O.
 Machine Products Co., E. 179th & St. Clair Aves., Cleveland, O.

Everything is listed under the NOUN or principal word

ROUND Piston Rings

—for—
Motor Car
Manufacturers

The periphery of FRANK-PROCESS Piston Rings are guaranteed not to vary in Roundness of periphery more than .005 inch.

Write for Samples

**FRANK MOTOR
PRODUCTS CORP.**
Richmond Hill, LONG ISLAND

THE BILTON Gear Milling Machine

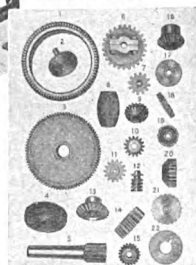
For Spur and Bevel
Gears and Many
Special Milling
Operations



Entirely automatic
in operation. Wide
range of usefulness.
Made in three con-
venient sizes.

Automobile
factories find
them especially
useful for auto-
matic milling
operations.

Ask for
Catalog No. 45



**THE BILTON MACHINE
TOOL COMPANY**
BRIDGEPORT, CONN., U. S. A.

PISTONS

That's

Our

Business

**Houpert Machine
Company**

Harrie Avenue and Marlon Street
LONG ISLAND CITY, NEW YORK

"KEEP THE OIL DOWN
and THE COMPRESSION UP"

TEETOR

"PERFECT CIRCLE"
PISTON RINGS

There are five points that you
want to look for in a Good Piston
Ring—

1. Individually cast.
2. Machined to a perfect circle.
3. Turned finish on the face.
4. Diagonal slot.
5. Fine workmanship.

TEETOR RINGS HAVE THEM

INDIANA PISTON RING CO.,
HAGERSTOWN, INDIANA

MACHINES, Gear Cutting (Continued)

New Britain Machine Co., Chestnut St., New Britain, Conn.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.
 Sloan & Chase Mfg. Co., 351 Sixth Ave., Newark, N. J.
 Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

MACHINES, Gear Hobbing

Adams Co., 295 Sixth St., Dubuque, Ia.
 Barber-Colman Co., Rockford, Ill.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 625.)
 Cincinnati Gear Cutting Machine Co., Elam St. & Garrard Ave., Cincinnati, O.
 Gould & Eberhardt, Colt & Chancellor Ave., Irvington, N. J.
 Jones Superior Machine Co., 1258-73 W. North Ave., Chicago, Ill.
 Lees-Bradner Co., 6310 Carnegie Ave., Cleveland, O.
 Melisselbach-Catucci Mfg. Co., 51 Stanton St., Newark, N. J.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.

MACHINES, Gear Tooth Chamfering

Betts Machine Co., Rochester, N. Y. "Ingle."
 Cross Gear & Engine Co., 3290 Bellevue Ave., Detroit, Mich. (See page 645.)
 Ingle—See Betts Machine Co.
 Walker Machinery Co., Chas. H., 709 Loraine Ave., Detroit, Mich.

MACHINES, Hair Picking

Atlas—See Curtis & Marble Machine Co.
 Atlas—See Lounsbury & Sons.
 Curtis & Marble Machine Co., 73 Cambridge St., Worcester, Mass. "Atlas."
 Empire—See Lounsbury & Sons.
 Lounsbury & Sons, G. H., 107-99 W. Third St., Cincinnati, O. "Atlas," "Empire."
 Frise—See Wilcomb Co.
 Wilcomb Co., Geo., 63 Chardon St., Boston, Mass. "Frise."

MACHINES, HAND SCREW—See Machines, Screw**MACHINES, HINGE FORMING—See Machines, Hood Hinge Forming****MACHINES, HOBBING—See Machines, Gear Hobbing****MACHINES, Hood Hinge Forming**

Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, HORIZONTAL BORING—See Machines, Boring**MACHINES, HUB BORING—See Machines, Aircraft Propeller Hub Boring****MACHINES, Lead Burning**

Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill.
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

MACHINES, Leaf Spring Straightening

Lauer Machine Co., John, 620-26 Antoine St., Detroit, Mich.

MACHINES, Leather Measuring

Nightingale, J. E., 15 Mill St., Danvers, Mass.
 Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich.
 Turner Tanning Machinery Co., Peabody, Mass.

MACHINES, Louvre Forming

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.

MACHINES, Metal Testing

(For Metal Testing Instruments—See Instruments, Metal Testing)

Brinell—See Holz, Herman A.
 Holz, Herman A., 17 Madison Ave., New York, N. Y. "Brinell."
 Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.
 Pittsburgh Instrument & Machine Co., 40 Water St., Pittsburgh, Pa.

MACHINES, Milling

Adams Co., 295 Sixth St., Dubuque, Ia.
 American Milling Machine Co., Richmond St. & McLean Ave., Cincinnati, O.
 Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.
 Becker Milling Machine Co., 53 Franklin St., Boston, Mass.
 Briggs—See Gooley & Edlund.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Burke Machine Tool Co., Sandusky St., Conneaut, O.
 Carter & Hakes Machine Co., Winsted, Conn.
 Cincinnati Milling Machine Co., 18511 Euclid Ave., Cincinnati, O.
 Cleveland Milling Machine Co., 18511 Euclid Ave., Cleveland, O.
 Cleveland Welding Machine Co., of The Hydraulic Steel Co., Cleveland, O.

Connecting Rods

for Automobiles, Tractors, Trucks, Aeroplanes, Motorcycles and Motor Boats

**Plain and Castle Nuts
Automatic and Hand Screw Machine Products**

THE WOOD & SPENCER COMPANY

1930 East 61st Street

CLEVELAND

THE KIND OF
PISTONS
YOU SHOULD USE

**FOR EITHER REPLACEMENTS
OR PRODUCTION**

Pistons manufactured by the Detroit Auto Piston Company are quality pistons.

They are machined accurately from carefully selected semi-steel castings. Made to fit all makes of automobiles, trucks, tractors, stationary, marine, or aircraft motors.

If you want the best pistons it will pay you to write us for prices and discounts on quantities.

DETROIT AUTO PISTON CO.

**1139 Baltimore Av. W.
Detroit, Michigan**

Motors of Small Bore

require close fitting piston rings
made from metal of first quality.

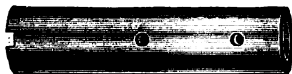
Eco
Numethod
CONCENTRIC
PISTON RINGS

are concentric one-piece rings machined by a new method from high grade individual castings. They are round, fit shallow grooves accurately and expand with uniform radial pressure. They maintain motor compression to the maximum point.

Ask us for samples.

ECO CO.

Wormwood Street, BOSTON, MASS.



**Buick
Cole**

**Cadillac
Haynes
Marmon**

Nash Packard



Piston Pins For All Automobiles

and many motor trucks. Highest quality throughout. Every pin turned out must pass rigid tests for size and hardening. Packed in cartons of four, six and eight for convenience of dealer. Send for April 1 Specification Chart and Price List.

BURGESS-NORTON MFG. CO.

532-544 PEYTON STREET, GENEVA, ILLINOIS

**85 Walker Street,
New York City**

**4 Meadow Street,
Providence, R. I.
717 Ellis Street,**

**407 National City Bldg.,
Cleveland, Ohio.**

**2450-2 South Wabash Ave.,
Chicago, Ill.**

San Francisco, Calif.

Please mention The Automobile Trade Directory

MACHINES, Milling (Continued)

Conradson Machine Tool Co.—See Ryerson & Son.
 Davenport Mfg. Co., W. College St., Meadville, Pa.
 Dow Mfg. Co., 181 Adams St., Braintree, Mass.
 Flannery Co., P. J., 33 Whiting St., New Britain, Conn.
 Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Gooley & Edlund, Huntington St., Cortland, N. Y. "Briggs."
 Hendey Machine Co., 105 Summer St., Torrington, Conn.
 Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.
 Inman Co., H. A., Newark, N. Y.
 Kearney & Trecker Co. (West Allis), Milwaukee, Wis.
 Kempsmith Mfg. Co. (West Allis), Milwaukee, Wis.
 Knight Machinery Co., W. B., 3920 W. Pine St., St. Louis, Mo.
 Kriesel—See Mill City Co.
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O. "Precision."
 McCrosky Tool Corp., Meadville, Pa.
 Mill City Co., Minneapolis, Minn. "Kriesel."
 Milwaukee—See Kearney & Trecker Co.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Oesterlein Machine Co., 3850 Spring Grove Ave., Cincinnati, O. "Ohio."
 Ohio—See Oesterlein Machine Co.
 Precision—See Lucas Machine Tool Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Rockford Milling Machine Co., Harrison Ave. & 11th St., Rockford, Ill.
 Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.
 Steptoe Co., John, 2961 Colerain Ave., Cincinnati, O.
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Toledo Milling Machine Co., Toledo, O.
 Thurston Mfg. Co., 140 Benedict St., Providence, R. I.
 U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.
 United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.
 Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.
 Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.
 Whitney Mfg. Co., Hartford, Conn. (See page 233.)

MACHINES, MORTISING—See Machines, Wood Mortising

MACHINES, MOTOR DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, PICKING—See Machines, Hair Picking

MACHINES, PROPELLER BLADE SHAPING—See Machines, Aircraft Propeller Blade Shaping

MACHINES, PROPELLER HUB BORING—See Machines, Aircraft Propeller Hub Boring

MACHINES, PROPELLER TOOTHING—See Machines, Aircraft Propeller Tooth-ing

MACHINES, REBORING—See Machines, Cylinder Reboring

MACHINES, RUBBING—See Machines, Body Rubbing

MACHINES, Screw

(Automatic)

Acme—See National Acme Co.
 Automatic Machine Co., 118 E. Washington Ave., Bridgeport, Conn.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Chicago Automatic Machine Co., 400-48 N. Oakley Blvd., Chicago, Ill.
 Cincinnati Automatic Machine Co., 1120 South St. (Oakley), Cincinnati, O. "Hayden."
 Cleveland Automatic Machine Co., 2269 Ashland Rd., Cleveland, O.
 Davenport Machine Tool Co., 167 Ames St., Rochester, N. Y.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 915.)
 Gridley—See National Acme Co.
 Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
 Hayden—See Cincinnati Automatic Machine Co.
 National Acme Co., Cleveland, O. "Acme," "Gridley." (See page 907.)
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.
 Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
 Smurr & Kamen Co., 328 N. Albany Ave., Chicago, Ill.
 Springfield Automatic Screw Machine Corp., Fitchburg, Mass.
 Townsend Mfg. Co., H. P., 8 Hoadley Pl., Hartford, Conn.
 Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

MACHINES, Screw

(Hand)

Acme Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.
 Bardons & Oliver, 1138 W. Ninth St., Cleveland, O.
 Dresses Machine Tool Co., 227-29 W. McMicken Ave., Cincinnati, O.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
 Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.

MACHINES, Screw Driving

Hergl Mfg. Co., Bridgeport, Conn.
 McKay Co., Geo. C., 1046 St. Clair Ave., Cleveland, O.
 Reynolds Machine Co., Massillon, O.

Everything is listed under the NOUN or principal word

MACHINES, SPRING STRAIGHTENING— See Machines, Leaf Spring Straightening

MACHINES, Spring Testing

Olsen Testing Machine Co., 500 N. 12th St., Philadelphia, Pa.

MACHINES, STITCHING—See Machines, Double Tread Tire Stitching

MACHINES, Tapping

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.

Baker Bros., Westlake Ave. & Post St., Toledo, O.

Barnes Drill Co., 814-80 Chestnut St., Rockford, Ill.

Burke Machine Tool Co., Sandusky St., Conneaut, O.

Garvin Machine Co., Spring & Varick Sts., New York, N. Y.

Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.

National Lathe Co., 11-15 W. Second St., Cincinnati, O.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)

Rickert-Shafer Co., 613 W. 11th St., Erie, Pa.
St. Louis Machine Tool Co., 922-32 Loughborough Ave., St. Louis, Mo.

Workwell Engineering & Mfg. Co., 4145 W. Kinzie St., Chicago, Ill.

MACHINES, TENONING—See Machines, Wood Mortising

MACHINES, TESTING—See Machines, Metal Testing; also Machines, Spring Testing

MACHINES, Tire Bandage Wrapping

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.

Pierce Wrapping Machine Co., 623 W. Jackson Blvd., Chicago, Ill.

Rossman, Roy G., 1524 12th Ave., Seattle, Wash.

Terkelsen & Wennberg, 226 A St., Boston, Mass.

Thropps Sons Co., John E., Trenton, N. J.

MACHINES, TIRE CHAIN REPAIR—See Tools, Tire Chain Repair

MACHINES, TIRE DEFLATING—See Machines, Tube Deflating

MACHINES, Tire Inspecting

(For spreading the shoe or opening it to permit more careful examination of the inner surface; for Tire Spreading Tools—See Tools, Tire Spreading)

Harkins Machine Co., T. L., Farnsworth St., Boston, Mass.

Kelhawke Mfg. Co., 1006 W. Lake St., Minneapolis, Minn.

Ramsdell Bros.—See Timco Co.

Robertson, W. H., 223 N. Church St., Rockford, Ill.

Timco Co., Schofield Bldg., Cleveland, O.
(Sole Distributors for Ramsdell Bros., Cleveland, O.)

MACHINES, Tire Removing and Replacing

Vance Engineering Co., 1949 E. 75th St., Chicago, Ill.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

MACHINES, Tire Skiving

(For skiving the beads off all tires to permit their use as inner liners)

American Shoe Machinery & Tool Co.—See R. T. Sales Co.

Maxwell Mfg. Co., 115 E. Murdock Ave., Wichita, Kans.

P. S. M. Co., 3116-36 Snelling Ave., Minneapolis, Minn. "Progressive." (See page 1047.)

Progressive—See P. S. M. Co.

R. T. Sales Co., 226 N. Adams St., Green Bay, Wis. (Sole Distributors for American Shoe Machinery & Tool Co., St. Louis, Mo.)

MACHINES, TIRE STITCHING—See Machines, Double Tread Tire

MACHINES, TOOTH CHAMFERING—See Machines, Gear Tooth Chamfering

MACHINES, Top Bow Dressing

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. "Peerless." (See page 983.)

Peerless—See Buob & Scheu.

MACHINES, TRANSMISSION BAND RIVETING FOR FORDS—See Machines, Brake Band Riveting

MACHINES, TREAD STITCHING—See Machines, Double Tread Tire

MACHINES, Tube Deflating and Valve Removing

Barton Mfg. Co., 800 N. Saginaw St., Flint, Mich. "Jifty."

Jifty—See Barton Mfg. Co.

P. S. M. Co., 3116-36 Snelling Ave., Minneapolis, Minn. (See page 1047.)

MACHINES, TUFTING—See Machines, Upholstery Tufting

MACHINES, Upholstery Button

Handy—See Tufting Machine Supply Co.

Lounsbury & Sons, G. H., 107-09 W. Third St., Cincinnati, O.

Reliable—See Tufting Machine Supply Co.

Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Handy," "Reliable."

MACHINES, Upholstery Tufting

Buser-Poston Tufting Machine Co., Chillicothe, O.

Novelty—See Tufting Machine Supply Co.

Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Novelty."

Everything is listed under the NOUN or principal word

MACHINES, Valve Seating and Grinding

(For Valve Seating Tools—See Tools, Valve Grinding)

Arnold Electric Tool Co., New London, Conn.
B. F. S. Mfg. Co., 54 Hermon St., Worcester, Mass.

Bean—See Liberty Metal Products Co.

Bilt-Rite Mfg. Co.—See Fairbanks Co.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md.

C & G—See Smith-Harper Co.

Cedar Rapids Engineering Co., 902 N. 17th St., Cedar Rapids, Iowa. "Kwik-way."

Eclipse Valve Grinder Co., Oak St. at 20th, Kansas City, Mo. (See page 631.)

Fairbanks Co., New York, N. Y. (Sole Distributor for Bilt-Rite Mfg. Co., Worcester, Mass.)

Foots-Burt Co., 4101 St. Clair Ave., Cleveland, O.

Franklin Machine & Tool Co., Springfield, Mass. (See page 631.)

Fry Mfg. Co., B. L., 2224 N. Ninth St., St. Louis, Mo.

Kwik-Way—See Cedar Rapids Engineering Co.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Smith-Harper Co., Tower Bldg., Chicago, Ill. "C & G."

Stenman Electric Tool Co., 42 Southbridge St., Worcester, Mass.

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.

Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.

United States Electrical Tool Co., Cincinnati, O. "U. S." (See page 367.)

Veltum & Clow—See Warnock-Wirth Sales Co.

Warnock-Wirth Sales Co., 616 S. Michigan Ave., Chicago, Ill. (Sole distributors for Veltum & Clow, Eugene, Ore.)

MACHINES, VERTICAL BORING—See Machines, Boring

MACHINES, WELDING—See Machines, Autogenous Welding; also Machines, Electric Welding

MACHINES, WIRING — See Machines, Fender Wiring

MACHINES, WIRE WRAPPING—See Machines, Aircraft Wire Wrapping

MACHINES, Wood Bending

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A. 415 W. Front St., Cincinnati, O.

MACHINES, Wood Boring

American Wood Working Machinery Co., 501 Lyell Ave., Rochester, N. Y.

Bental & Margedant Co., Hamilton, O.

Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

Jones Superior Machine Co., 1263-73 W. North Ave., Chicago, Ill.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Ober Mfg. Co., Chagrin Falls, O.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Prybil Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Root Co., B. M., 30-34 Jefferson Ave., York, Pa.

Smith Machine Co., H. B., Smithville, N. J.

Valley City Machine Works, 12-16 Campus Ave., N. W., Grand Rapids, Mich.

MACHINES, Wood Mortising and Tenoning

American Wood Working Machinery Co., 501 Lyell Ave., Rochester, N. Y.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

MACHINES, WRAPPING—See Machines, Tire Bandage Wrapping

MACHINISTS' CLAMPS—See Clamps, Machinists'

MACHINISTS' HAMMERS—See Hammers, Machinists'

MAGNET CHARGERS—See Chargers, Magneto Magnet

MAGNET REMAGNETIZERS—See Chargers, Magneto Magnet

MAGNETIC CHUCKS—See Chucks, Magnetic

MAGNETIC PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline

MAGNETO ALIGNING FIXTURES FOR FORDS—See Fixtures, Magneto Aligning and Testing

MAGNETO BRUSHES—See Brushes, Magneto, Starter and Generator

MAGNETO COUPLINGS—See Couplings, Magnetos and Generators

MAGNETO COVERS—See Covers, Magneto

MAGNETO MAGNET CHARGERS—See Chargers, Magneto Magnet

MAGNETO METERS—See Meters, Magneto

MAGNETO METERS FOR FORDS—See Meters, Magneto

Everything is listed under the NOUN or principal word

SAVE YOUR VALVES AND VALVE SEAT REAMERS from the scrap pile. The salvage will pay for a **FRANKLIN REPAIR SHOP UNIT**.

VALVE AND VALVE SEAT REAMER ground and sharpened on the same machine, same angle.

Extra attachment for sharpening expansion reamers.

Attachment for redressing contact points on ignition systems.

Flexible shaft attachment with brush for removing carbon, drilling and grinding.

Average time required for all work on valves and seats on twin six motors is within one hour.

Extract from service manual of large Motor Car Manufacturer.

Franklin Machine & Tool Co.

Mfrs. of Service Station Equipment
Springfield, Mass.

ELECTRIC

Valve Grinders

Evenly Balanced

Perfect Control

Light Weight

Ample Power

Our Patented

Ballistic Movement

Produces

**Rapid Oscillation and
Slow Rotation**

The best, easiest, quickest and most efficient method of grinding valves.

JOBBERs—A good proposition for you. Won't you write for it?

USERs—If your jobber cannot supply you write us about it.



ECLIPSE VALVE GRINDER CO.

Oak Street at 20th

Kansas City, Mo.

"More Than a Million a Month"



The **Piston**
RING COMPANY
MUSKEGON, MICH.

SPRINGOID PACKING

The Ideal
Packing for
Water
Gasoline
Oil, etc.

Gaskets Cut From
Any Material

Springman Paper Products Co.
Detroit, Mich.

Please mention The Automobile Trade Directory

MAGNETO MOUNTING ATTACHMENTS

—See Attachments, Magneto Mounting

MAGNETO PARTS—See Parts, Magneto Coil and Distributor**MAGNETO PLUG HOLDERS FOR FORDS**
—See Holders, Magneto Plug**MAGNETO TESTING FIXTURES FOR FORDS—See Fixtures, Magneto Aligning and Test****MAGNETO WINDINGS—See Windings****MAGNETOS, Aircraft Ignition**

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Swiss."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berkshire Magneto Co., 70 West St., Pittsfield, Mass. "Liberty."

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.
Elsemann Magneto Corp., 32 33rd St., Brooklyn, N. Y. (See page 633.)Ericsson Mfg. Co., Buffalo, N. Y. "Berling."
K-W Ignition Co., 2900 Chester Ave., Cleveland, O.Lauraine Magneto Co., Long Island City, N. Y.
Liberty—See Berkshire Magneto Co.

Ohmer—See Recording & Computing Machines Co.

Recording & Computing Machines Co., Dayton, O. "Ohmer."

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., Arlington Ave., East Orange, N. J.

Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

Swiss—See American Magneto Co.

MAGNETOS, Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O.

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berkshire Magneto Co., 70 West St., Pittsfield, Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.
Carter-Long Magneto Co., North Chicago, Ill. "Lenox."

Elsemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 633.)

Ericsson Mfg. Co., Buffalo, N. Y. "Berling."

Heco—See Heinze Electric Co.
Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

K-W Ignition Co., 2900 Chester Ave., Cleveland, O.

Kingston—See Kokomo Electric Co.

Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."

Lauraine Magneto Co., Long Island City, N. Y.

Lenox—See Carter-Long Magneto Co.

Natco—See National Ignition Co.

National Coll Co., 221 N. Cedar St., Lansing, Mich.

National Ignition Co., Irvington-On-Hudson, N. J. "Natco."

Ohmer—See Recording & Computing Machines Co.

Recording & Computing Machines Co., Dayton, O. "Ohmer."

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Rogers—See Vita Mfg. Co.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

Simplex Magneto Co., 1790 Broadway, New York, N. Y.

Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

Standard Ignition Co., Elkhart, Ind.

Teagle Co., 1125 Oregon Ave., Cleveland, O.

Vita Mfg. Co., Williamson Bldg., Cleveland, O. "Rogers."

MAGNETOS, Ignition, for Fords

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Bosch—See American Bosch Magneto Corp.
Elsemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 633.)

Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

MAGNETOS, Motor Boat Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Swiss." "Elkhart."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Berkshire Magneto Co., 70 West St., Pittsfield, Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.
Elsemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 633.)

Elkhart—See American Swiss Magneto Co.

Ericsson Mfg. Co., Buffalo, N. Y. "Berling."

K-W Ignition Co., 2900 Chester Ave., Cleveland, O.

Lauraine Magneto Co., Long Island City, N. Y.

Motsinger Device Mfg. Co., 26th & Ferry Sts., Lafayette, Ind.

National Coll Co., 221 N. Cedar St., Lansing, Mich.

Ohmer—See Recording & Computing Machines Co.

Recording & Computing Machines Co., Dayton, O. "Ohmer."

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

Swiss—See American Swiss Magneto Co.

MAGNETOS, Motorcycle Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."

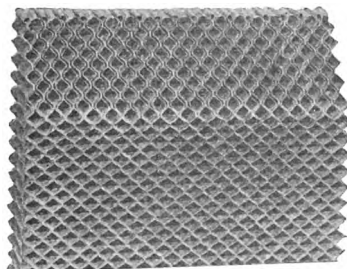
American Swiss Magneto Co., 1682 Fernwood Ave., Toledo, O. "Elkhart."

Apollo Magneto Co., Grand St., Kingston, N. Y.

Everything is listed under the NOUN or principal word

Premier Honeycomb Core

Write for Samples

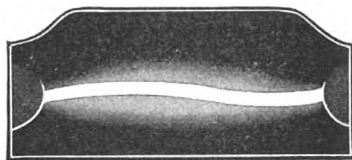


Pat. Pend.

RADIATORS BUILT FOR ALL CARS

100% Cooling
No False Fins
Greatest Vibration Resistance
Estimates Cheerfully Given
From Blue Prints Furnished
Manufactured by

N. J. LAMP WORKS, Inc.
Radiator Dept. NEWARK, N. J.



The white hot
spark you want
when you want
it—and every
time!

THE EISEMANN MAGNETO CORP'N

32 Thirty-Third Street
BROOKLYN, N. Y.

Detroit

Chicago



Absolutely reliable
Dependable
Lives as long
as the engine

EISEMANN
"MAG"

Automatic Extension Reels

For Electric Lamps

Pat. Jan. 30, 1917



Especially adapted for use in Manufacturing Plants, Garages, Machine Shops, etc., and a great convenience for adjustable extensions for portable electric drills, grinders, fans, etc. Equipped

with 25 ft. reinforced cord, lamp socket and guard. Attached to ceiling, beam or conduit. A swivel joining enables lamp to be carried in any direction from Reel, returning it automatically when not in use. An automatic lock holds the lamp at any desired distance from the reel.

Perfect insulation—stands test of an A. C. Potential of 1250 volts—only 250 volts required for lamp service. Safe—satisfactory—convenient—necessary.

Approved by Underwriters. Local Fire and Electrical Boards endorse it.

Write for particulars and prices
THE CINCINNATI SPECIALTY MFG. CO., INC.

Sole Manufacturers
1911 Powers St., W. Cincinnati, Ohio

The CANDLER RADIATOR COMPANY

1084-1086 Jefferson Ave., East

DETROIT, MICH.

Manufacturers
of the

Candler Hexagon

Cellular Radiators

Fuel Tanks

Under Pans

Drawn Fenders

Light Stampings

Please mention The Automobile Trade Directory

MAGNETOS, Motorcycle Ignition (Continued)

Berling—See Ericsson Mfg. Co.
 Bosch—See American Bosch Magneto Corp.
 Eisemann Magneto Corp., 32 33d St., Brooklyn, N. Y. (See page 633.)
 Elkhart—See American Swiss Magneto Co.
 Ericsson Mfg. Co., Buffalo, N. Y. "Berling."
 Lauraine Magneto Co., Long Island City, N. Y.
 National Coil Co., 221 N. Cedar St., Lansing, Mich.
 Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

MAGNETOS, Tractor Ignition

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
 American Swiss Magneto Co., 1882 Fernwood Ave., Toledo, O. "Swiss."
 Apollo Magneto Co., Grand St., Kingston, N. Y.
 Berkshire Magneto Co., 70 West St., Pittsfield, Mass.
 Berling—See Ericsson Mfg. Co.
 Bosch—See American Bosch Magneto Corp.
 Eisemann Magneto Corp., 32 33rd St., Brooklyn, N. Y. (See page 633.)
 Ericsson Mfg. Co., Buffalo, N. Y. "Berling."
 K-W Ignition Co., 2900 Chester Ave., Cleveland, O.
 Lauraine Magneto Co., Long Island City, N. Y.
 Molsinger Device Mfg. Co., 26th & Ferry Sts., Lafayette, Ind.
 National Coil Co., 221 N. Cedar St., Lansing, Mich.
 Ohmer—See Recording & Computing Machines Co.
 Recording & Computing Machines Co., Dayton, O. "Ohmer."
 Remy Electric Co., 1628 E. Grand Blvd., Detroit, Mich.
 Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J.
 Standard Ignition Co., Elkhart, Ind.
 Swiss—See American Swiss Magneto Co.
 Teagle Co., 1125 Oregon Ave., Cleveland, O.

MAGNETS, Permanent

(For Magneto)

Esterline Co., 227 E. South St., Indianapolis, Ind.
 Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
 Shunk Mfg. Co., Bucyrus, O.
 Stromberg-Carlson Telephone Mfg. Co., 1050 University Ave., Rochester, N. Y.

MAILING BAGS—See Bags, Shipping

MAIN BEARING JIGS—See Jigs, Main Bearing and Connecting Rod Babbitting

MAIN BEARING REAMERS FOR FORDS—See Reamers, Main Bearing and Connecting Rod

MALLEABLE CASTINGS—See Castings, Malleable Iron

MALLETS, BRASS AND COPPER—See Hammers, Brass and Copper

MALLETS, Rubber

(For use in place of a metal hammer on finished surfaces)

Thermoid Rubber Co., Trenton, N. J. (See page 551.)

MANDREL CLAMPS—See Clamps, Tube Splicing Mandrel

MANDRELS, Expanding

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa. (See page 635.)
 Brubaker & Bros., W. L., 50 Church St., New York, N. Y.
 Champion—See Western Tool & Mfg. Co.
 Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Ettco."
 Ettco—See Eastern Tube & Tool Co.
 Le Count, Wm. G., Merritt St., South Norwalk, Conn.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Nicholson & Co., W. H., 13 Oregon St., Wilkes-Barre, Pa.
 Standard Tool Co., 6900-24 Central Ave., Cleveland, O.
 Western Tool & Mfg. Co., Springfield, O. "Champion."

MANDRELS, Inner Tube

Carl's Sons, Chas. W., Coles St., Trenton, N. J.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1089.)
 New Haven Sherardizing Co., 868 Windsor St., Hartford, Conn.

MANGANESE STEEL—See Steel, Manganese

MANIFOLD HEATERS—See Heaters, Mixture

MANIFOLD LOCKS—See Locks, Manifold

MANIFOLD REGISTERS—See Registers, Autographic and Manifold

MANIFOLDS, Intake and Exhaust

(Braced and Welded Manifolds. For Cast Manifolds—See Castings)

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 605.)
 American Tube Bending Co., 5-9 Lawrence St., New Haven, Conn.
 American Tube Co., 2704 S. Rockwell St., Chicago, Ill.

Everything is listed under the NOUN or principal word

EQUIP YOUR RADIATOR WITH A WINTERFRONT



Pat. April 11, 1916.

FOR FLAT FRONT RADIATORS

A Thermostatic Radiator Shutter entirely automatic in operation. Four special fasteners attach it in two minutes. No cutting—no soldering. In ordering state make and model of car.

PINES MANUFACTURING CO.

Dept. E

408 N. Sacramento Blvd., CHICAGO, ILL.

The Alert Boring and Facing Tool Made in Three Sizes



This handy tool is for use on turret lathes, automatic screw machines and drill presses, for facing, counterboring and radiusing where a fine finish is desired, and for boring large holes where the cost of large high-speed drills is prohibitive.

Holes up to six inches deep have been bored in one cut, leaving a very accurate hole and a good finish, due to the fact that the tool is guided at the bottom.

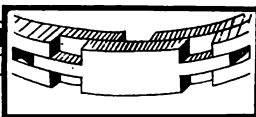
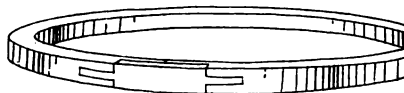
The body is made of the toughest material and specially heat treated to give maximum strength and fitted with high-speed steel blades.

Write for descriptive circular "A.T." and price-list

We Also Manufacture

Patented Ratchet Tap Wrenches
Patented Roller Grip Arbers
Patented Roller Grip Mandrels
High-Speed Solid Tap Wrenches
Hand Knurling Tool Holders
And Scrapers

ALERT TOOL COMPANY
237 North 6th Street, Philadelphia, Pa.



GRA-SEAL PISTON RINGS

Perfected and patented with the Strongest Patent since 1886 by W. G. Burdick.

Installed in U. S. Government and other cars, and in every instance increased the mileage on gasoline from 15% to 40%, reduced oil consumption from 25% to 50%, eliminated carbon and dirty spark plugs, and after four years' actual service are still doing the work.

Write for our terms to the trade

UNIVERSAL PISTON RING COMPANY

1426 Rock Street, Rockford, Illinois

The A. J. Alsdorf Corporation, Exclusive Foreign Distributors, Chicago, U. S. A.

SCHAAP PISTON RINGS

Accepted by 95% of the Racing Drivers
Insure You

SILENT SMOKELESS POWER

Ralph Mulford drove 3000 miles of racing on one set of Schaap Rings. Average of 107 Miles per Hour.

Manufactured by
SCHAAP AUTOMOBILE CO.
344 Cumberland Street
Brooklyn, N. Y.

Prices
\$1.00 up to 4"
1.25 up to 4 1/2"
1.50 up to 5 1/2"

Please mention The Automobile Trade Directory

MANIFOLDS, Intake and Exhaust (Continued)

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 895.)
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
 Deposited Metal Products Co., 65 Bridge St., Newark, N. J.
 Detroit Tube Products Co., 304 S. Junction Ave., Detroit, Mich.
 Great Scott Vaporizer Co., Norris Bldg., Grand Rapids, Mich.
 Imperial Brass Mfg. Co., 1354 W. Harrison St., Chicago, Ill. (See page 177.)
 Kent Co., F. C. Irvington, N. J. (See page 553.)
 Michigan Steel Tube Products Co., Elm-tree Blvd. nr. Holbrook & Conant, Detroit, Mich. (See page 1027.)
 Monarch Foundry Co., Detroit, Mich.
 New Jersey Tube Co., Newark, N. J.
 Ohio Heating & Pipe Bending Co., 1061-68 W. 11th St., Cleveland, O.
 Roberts Brass Co., 249 Lake St., Milwaukee, Wis.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Standard Metalwork Co., 92-108 Prospect St., Thompsonville, Conn.
 Standard Parts Co., Cleveland, O. (See page 283.)
 Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.
 Tubular Products Co., 53 Railroad Ave., Southington, Conn.
 United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.
 Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo." (See page 693.)
 Wilmo—See Whittier Co.
 Wolverine Tube Co., Detroit, Mich. (See page 671.)

MANIFOLDS, Intake, for Fords

(Special intake manifolds with exhaust gas or hot water jacket; see also Hotwater, Mixture, for Kerosene Carburetors—See Carburetors, Kerosene)

American Auto Products Co., 240-44 S. Broadway, Denver, Colo. "J. E. J."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."
 Anco—See Anderson Co.
 Anderson Co., 232 S. St. Joseph St., South Bend, Ind. "Anco."
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. (See page 711.)
 Benjamin Motor Products Co., Dearborn, Mich.
 Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.
 Cooper Foundry Co., Atchison, Kans. "Eureka."
 Coppock, A. J., 123 Euclid Ave., W., Detroit, Mich.
 Dallas Auto Device Co., 1018 Elm St., Dallas, Tex. "Gasaver."
 Eureka—See Cooper Foundry Co.
 Frankfort Carburetor Co., Frankfort, Ind.
 Gasaver—See Dallas Auto Device Co.
 Gasifier Mfg. Co., St. Louis, Mo. "Maurice."
 Great Scott Vaporizer Co., Norris Bldg., Grand Rapids, Mich.
 Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
 J. B. J.—See American Auto Products Co.
 J. E. S.—See Kerosene Motor Appliance Co.
 Kerosene Motor Appliance Co., 245 W. 55th St., New York. "J. E. S."
 Maurice—See Gasifier Mfg. Co.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Ospeco—See Michigan Auto Products Co.
 Star-K—See Stark-Inland Machine Works.
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Sunderman Corp., Newburgh, N. Y. (See page 393.)
 3-A-Co—See American Automobile Accessories Co.
 Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo." (See page 693.)
 Wilmo—See Whittier Co.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 671.)

MANUAL ENGINE STARTERS—See Starters, Manual or Pedal or Lever Engine

MANUFACTURERS AGENTS

(Covering only Manufacturing Agents who advertise in this publication)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (See page 243.)
 Associated Automobile Accessories Co., 122 W. 43d St., New York, N. Y. (See page 723.)
 Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 701.)
 Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 637.)
 Berger & Co., 208 W. 11th St., Los Angeles, Cal. (See page 655.)
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (See page 335.)
 Clucker & Hixson Co., 47 Murray St., New York, N. Y. (See page 289.)
 Denton & Anderson, Engineers' Bldg., Cleveland, O. (See page 1009.)
 Eckhouse, Horace H., 1834 Broadway, New York, N. Y. (See page 461.)
 Fav Co., J. H., 27 Warren St., New York, N. Y. (See page 243.)
 Fulton-Houston Co., 1146 Michigan Blvd., Chicago, Ill. (See page 251.)
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (See page 853.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (See pages 343 to 346.)
 Martin, Jas., 130-34 W. 52nd St., New York, N. Y. (See page 637.)
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (See page 187.)
 Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (See page 791.)
 Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. (See page 683.)
 New England Mills Co., 1027 W. Van Buren St., Chicago, Ill. (See page 143.)
 Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 279.)
 Simek & Co., J. A., 19-21 Park Row, New York, N. Y. (See page 841.)
 Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (See pages 637 and 651.)
 Tutthill Sales Co., St. Louis, Mo. (See page 641.)
 Wilco Co., 172 Griswold St., Detroit, Mich. (See page 207.)
 Zinke Co., 1823-25 Michigan Ave., Chicago, Ill. (See pages 685 to 692.)

Everything is listed under the NOUN or principal word

DETROIT WEATHERPROOF TOPS

AUTOMOTIVE EQUIPMENT AND SUPPLIES
FOR

MOTOR CAR — TRUCK — TRACTOR — MOTOR BOAT — AEROPLANE

MACHINE SHOP — GARAGE — VULCANIZING PLANT
OUTFITTERS

BECK & CORBITT
AUTOMOTIVE EQUIPMENT

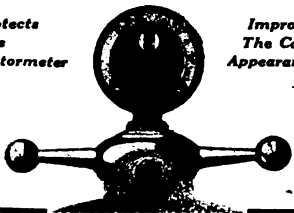
FIRST STREET, ASHLEY TO O'FALLON ST. LOUIS, MO.

SERVICE STATION EQUIPMENT

FIRESTONE RIMS

DODGE TRANSMISSION

*Protects
The
Motormeter*



*Improves
The Car's
Appearance*

**The SUPORTER
MOTORMETER LOCK**

A utility, not a luxury. Takes the place of the regular radiator cap. Installed in two minutes. Absolutely safeguards the motormeter.

Makes removal of the cap a simple matter—one-eighth turn and it lifts off. No screw threads to strip. Rust-proof—polished like silver.

Order a Stock Today From Your Jobber. If he can't supply you, write direct to

**SUPORTER MOTORMETER LOCK
COMPANY**
Department B
1449 South Michigan Avenue, Chicago, Ill.



SURE MIKE
IMPROVED CRITCHLEY TYPE SIX BLADE
EXPANSION REAMER

THE Staff "Sure Mike" Improved Critchley Type Six-Blade Expansion Reamer is so greatly superior in the work it does that it cannot be compared with other reamers in common use. The six blades are set staggered to prevent chattering and are firmly held in longitudinal grooves. Each reamer will expand to more than .010 above its listed maximum size, which allows considerable regrinding. Sizes 15-32 to 4½ inches.

Our Guarantee

We will replace or repair any Staff "Sure Mike" Expansion Reamer found defective in workmanship or materials.

Write for catalog or price list

J. WADSWORTH STAFF
122 South Michigan Boulevard
CHICAGO, ILLINOIS

STAFF
AUTOMOTIVE EQUIPMENT

JAS. MARTIN

Manufacturer and Jobber of

TIRES, AUTO ACCESSORIES AND HARDWARE
MARTIN CORD TIRES, Gray and Red Tubes
MONO CORD TIRES, Gray and Red Tubes
NORWALK CORD AND FABRIC TIRES, Gray and Red Tubes
TRIPLEX FABRIC TIRES, Gray and Red Tubes
SOUTH BEND FABRIC TIRES AND ODELL CORDS

JAS. MARTIN, 130 to 134 West 52nd St., NEW YORK

Please mention The Automobile Trade Directory

MAPS, Road

Automobile Blue Book Publishing Co.,
The, 243 W. 39th St., New York, N. Y.
(See pages 149 to 152.)

Claason Map Co., 1515 Tremont Pl., Denver,
Colo.

Iowa Map Co., Observation Bldg., Des Moines,
Ia.

King, Sydney J., 626-36 S. Clark St., Chicago,
Ill.

Mendenhall, C. S., 406 Elm St., Cincinnati, O.
National Mileometer Co., Marquette Bldg.,
Detroit, Mich.

Scarborough Motor Guide Co., 32 E. Georgia
St., Indianapolis, Ind.

Tib Automobile Route Book Co., Shukart
Bldg., Kansas City, Mo.

Walker Lithograph & Publishing Co., 400
Newbury St., Boston, Mass.

MARKET REPORTS—See Reports, Used
Car Market

MASTER VIBRATORS—See Coils, Spark

MASTER VIBRATORS FOR FORDS—See
Vibrators, Master

MAT BINDING—See Binding, Mat and
Carpet

MATS, Carpet

(See also Carpet)

Hopewell Bros., Watertown, Mass.
(See page 641.)

MATS, Cocoa

(Cocoas or Fiber Mats for car floors; for Cocoa Running
Board Mats—See Mats, Running Board)

Bantam—See Tyler Mfg. Co.

Darragh, Small & Co., 177 Water St., New
York, N. Y.

Glenfield—See Wehn Son & Co.

Kemp & Son., Wm. F., 1027-33 N. Fourth St.,
Philadelphia, Pa.

Koko Mat Co.—See Mooers-Wright Co.

McCabe & Bro., Benj., 87 E. 18th St., New
York, N. Y.

Mat Co., Muskegon, Mich.

(See pages 639 and 640.)

Mooers-Wright Co., 1400 Broadway, New
York, N. Y. (Factory Sales Agents for
Koko Mat Co., New York, N. Y.)
(See page 187.)

Tyler Mfg. Co., 755 Boylston St., Boston,
Mass. "Bantam."

Ranccas Mills, Trenton, N. J.

Wehn Son & Co., Geo., Glenfield, Pa. "Glen-
field."

Wisconsin Mat Co., 392-94 Sixth St., Milwau-
kee, Wis.

MATS, Floor Board, for Fords

(Molded or formed rubber, leather or metal mats;
See also Carpet, Coach)

Bantam—See Tyler Mfg. Co.

Everware Rubber Co., 241 Oregon St., Milwau-
kee, Wis.

Federal Rubber Co., (Cudahy), Milwaukee,
Wis.

Fernald Mfg. Co., North East, Pa.

Goodrich Co., B. F., S. Main St., Akron, O.

Hercules—See Ray Fabric Mills.

Mayo & Co., F. A., Boston, Mass.

Mechanical Rubber Co., 307 W. Randolph St.,
Chicago, Ill.

Nathan Novelty Mfg. Co., 55 Fifth Ave.,
New York, N. Y. (See page 313.)

Powers Mfg. Co., Waterloo, Iowa.
(See page 581.)

Ray Fabric Mills, Franklin, Mass. "Hercules."

Spiro Mfg. Co., C., 63-73 E. 121st St., New
York, N. Y. "Uniq."

Tyler Mfg. Co., 755 Boylston St., Boston,
Mass. "Bantam."

Uniq—See Spiro Mfg. Co.

Wisconsin Mat Co., 392-94 Sixth St., Milwau-
kee, Wis.

MATS, Leather

Brockton Heel Co.—See F. A. Sales Co.

F. A. Sales Co., 255 Fifth Ave., New York,
N. Y. (Sole Distributors for Brockton Heel
Co., Brockton, Mass.)

H. & C.—See Winship, W. W.

Winship, W. W., 71 Summer St., Boston,
Mass. "H. & C."

MATS, LINOLEUM—See Linoleum

MATS, Rubber

(Rubber Mats and Matting for car floors or running
boards)

Boston Belting Co., 34 Linden Park St., Bos-
ton, Mass.

Boston Woven Hose & Rubber Co., Cam-
bridge, Mass. "Lenox," "Tiger."

Bowers Rubber Works, 68-70 Sacramento St.,
San Francisco, Cal.

Cincinnati Rubber Mfg. Co., Cincin-
nati, O. (See page 531.)

Combination Rubber Mfg. Co., Bloomfield,
N. J.

Diamond Holdfast Rubber Co., 33 Auburn
Ave., Atlanta, Ga. "Holdfast."

Empire Rubber & Tire Co., Mulberry St. &
Clinton Ave., Trenton, N. J.

Essex Rubber Co., May & Beakes Sts., Tren-
ton, N. J.

Everware Rubber Co., 241 Oregon St., Mil-
waukee, Wis.

Federal Rubber Co., (Cudahy), Milwaukee,
Wis.

Goodrich Co., B. F., S. Main St., Akron, O.

Hamilton Rubber Mfg. Co., Mead & Prince
Sts., Trenton, N. J.

Hewitt Rubber Co., 240 Kensington Ave., Buf-
falo, N. Y.

Holdfast—See Diamond Holdfast Rubber Co.

Home Tire Co., Trenton, N. J.

Lenox—See Boston Woven Hose & Rubber
Co.

Manhattan Rubber Mfg. Co., Willett St., Pas-
saic, N. J.

Mechanical Rubber Co., 307 W. Randolph St.,
Chicago, Ill.

Mechanical Rubber Co., C. & P. & Nickel
Plate R. R., Cleveland, O.

Millford Rubber Works, Millford, Ill.

Monarch Linoleum & Rug Co., Bulletin Bldg.,
Philadelphia, Pa.

Monarch Rubber & Oil Cloth Co., Drexel
Bldg., Philadelphia, Pa.

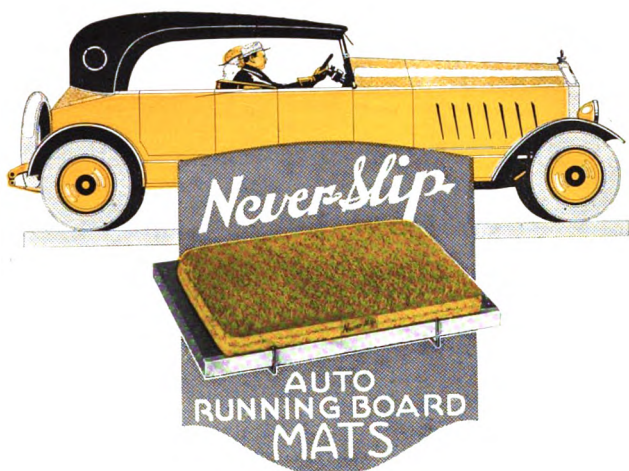
New York Belting & Packing Co., 91 Cham-
bers St., New York, N. Y.

Pennsylvania Rubber Co. of America, Jean-
nette, Pa.

Quaker City Rubber Co., 629 Market St., Phil-
adelphia, Pa.

Thermoid Rubber Co., Trenton, N. J.
(See page 551.)

Everything is listed under the NOUN or principal word



Look for the Trade Mark

Every "Never Slip" running board mat carries the metal name plate.

That name plate is your guarantee of superior material and workmanship.

It's a guarantee of satisfaction to your customer. It means that he is getting the best and most serviceable mat money can buy.

Don't buy "just mats." Buy "Never Slip" mats. It pays.

There is a "Never Slip" jobber near you. His name is on the next page.

Manufactured by

THE MAT COMPANY

Factory & Gen'l Office: MUSKEGON, MICH.

CHICAGO OFFICE: 1116-1117 Lytton Building

"Never-Slip" Distributors

—There's One Near You—Use Him

Alabama
Birmingham—Moore, Hamilton Hardware Co.
Mobile—McGowan, Lyons Hardware Co.

Arizona
Phoenix—Western Auto Supply Agency, 315 N. Central Ave.

Arkansas
Fort Smith—Atkinson-Williams Hardware Co.

California
Los Angeles—E. A. Featherstone
McCoy Motor Supply Co., 1020 S. Los Angeles St.
Times Square Auto Supply Company, 941 So. Los Angeles St.
San Francisco—Chandler & Lyon Co., 1238 Van Ness Ave.

Dunham, Carney & Hayden Co.
Breckley-Ralston Co., 445 Turk St.
Hullbrook, Merrill & Sonum.
W. E. & W. H. Jackson, 865 Mission St.
McCoy Motor Supply Co., 1524 Bush St.
Times Square Auto Supply Company, 738 Mission St.
Wendrick, Nichols Co., 538 Golden Gate Ave.

Colorado
Denver—Auto Equipment Co., 14th & Lawrence Streets
Inster Automobile Supply Co., 138 16th St.
B. K. Sweeney Electrical Co.
Western Auto Supply Agency, 1500 Broadway.
Pueblo—Motor Accessory & Tire Co.

Connecticut
Hartford—Aling Rubber Co.
Meriden—Aling Rubber Co.
New Haven—Aling Rubber Co.
Sam Schwartz Co., 19 Drexell Ave.

Delaware
Wilmington—Delaware Hardware Co.

District of Columbia
Washington—Ruddolph & West Co., 1332 New York Ave. N. W.
Southern Automobile Supply Co., 1232 Penn Ave. N. W.

Florida
Tampa—C. Norman Baughman Co.
Knight & Wall Co.

Georgia
Albany—Ferrell Wright Co., 106 North St.
Macon—Merritt Harkins Co.

Iaho
Pocatello—Salt Lake Hardware Co.

Illinois
Chicago—Automobile Supply Co., 1335 S. Michigan Blvd.
Auto Tire Sales Co., 1146 S. Michigan Blvd.
Breckley-Ralston Co., 1601 S. Michigan Blvd.
Chicago Automobile Supply House, 1349 Michigan Blvd.
Chicago Auto Equipment Co., 808 W. Jackson Blvd.
Hend Van Mfg. Co., 180 N. Market St.
John C. Hood & Co., 137 W. Illinois St.
Sheridan Auto Supply, 325 Sheridan Road.
Times Square Auto Supply Company, 1200 Michigan Ave.
Times Square Auto Supply Company, 3260 Sheridan Road.
Times Square Auto Supply Company, 21 W. Jackson Blvd.
Drexler-Markewitz & Wells Co.
Washington—Washington Automobile & Supply Company.

Indiana
Fort Wayne—R. M. Kaough & Co., 224 W. Main Street.
Huntington—Huntington Motor Supply Co.
Indianapolis—Indianapolis Saddletry Co.
La Fayette—Columbia Tire & Supply Co., 427 Columbia St.
Logansport—Charles Young & Son.
South Bend—Howard Crandall Co., 221 S. Main St.
Terre Haute—Terre Haute Automobile Co.

Iowa
Burlington—Times Square Auto Supply Company, Corner Main & Valley Sts.
Cedar Rapids—Cedar Rapids Pump Co.
Des Moines—Herring Motor Co.
Hipple State Co., 204 Mulberry St.
Times Square Auto Supply Company, 9th and Locust St.
Sioux City—Schultz Auto Supply Co.
Times Square Auto Supply Company, N. W. Cor. 6th and Nebraska.
Waterloo—Repass Automobile Co.

Kansas
Atchison—Blith, Mier & Sullivan Hardware Co.
Hutchinson—The Auto Supply Co., 114 Sherman Street.
Topeka—W. A. L. Thompson Hardware Co.
Wichita—Johnson Bros. Hardware & Motor Equipment Co.
Times Square Auto Supply Company, 140 N. Main St.

Kentucky
Louisville—Harrison & Gathright, 709 W. Main Street.

Louisiana
Monroe—Monroe Automobile & Supply Co.
New Orleans—Southern Hardware & Woodstock Co., 711 Baronne St.
Shreveport—Thomas Ogilvie Hardware Co.

Maine
Portland—James Bailey Co., 18 Pru St.
W. E. & B. J. Harmon, 228 Middle St.

Maryland
Baltimore—Baltimore Gas Light Co., 307 Redwood Ave.
Paw Roberton-Rainey Co., 108 S. Howard St.
Times Square Auto Supply Company, Corner Howard and Franklin Sts.

Massachusetts
Boston—Standard Auto Supply Co., 239 Columbia Avenue.
Times Square Auto Supply Company, 159 Massachusetts Ave.
Holyoke—J. Ruffin & Co., 301 Dwight St.
Springfield—Forbes & Wallace, 390 Main St.
J. G. Riggs & Sons Co., Inc.

Michigan
Bay City—Bay City Tire & Supply Co.
Detroit—Automobile Supply Co., 218 Jefferson Avenue.
Automobile Equipment Co., 225 Jefferson Ave.
E. A. Bowman, 219 John St.
Bowman-Gould Co., 842 Woodward Ave.
Breckley-Ralston Co.
Michigan Automobile Supply Co., 229 Jefferson Avenue.
Eastland—Della Hardware Co.
Thul—Hunt Motor Supply Co., 905 S. Saginaw St.
Grand Rapids—Tack Auto Supply Co.
Kalamazoo—Edwards & Chamberlain.
Lansing—Allen Sparks Co.
Livonia—Harris—Board Campbell & Co.
Saginaw—F. E. Doherty, 801 Grosseille St.
Muskegon—Boesher.

Minnesota
Duluth—Duluth Auto Supply Co.
Minneapolis—McKay, Grubb Rubber Co.
Times Square Auto Supply Company, 1229 Hennepin Ave.
St. Paul—Edwards & Chamberlain.
Waconia St.
G. Semmer & Company.
Times Square Auto Supply Company, 8th & Sixth St.
Winona—Minnesota Auto Supply Co.

Mississippi
Natchez—Baker & McEwold Hardware Co.

Missouri
Joplin—Tri-State Auto Supply Co.
Kansas City—Motor & Machinery Supply Co.
Peaks Auto Supply.
Western Auto Supply Co., 1422 Grand Ave.
Times Square Auto Supply Company, 14th and Grand Ave.
St. Louis—Beck & Corbin Iron Co., 1232 N. Main St.
J. B. Sikes Saddlery Co., 2102 Washington Avenue.
Times Square Auto Supply Company, 1129-1131 Locust St.

Montana
Butte—Bettam Motor Supply Co., 224 S. Main Street.

Nebraska
Omaha—Lee Colt Anderson Hardware Co.
Powell Supply Company.

Nevada
Reno—Nevada Auto Supply Co.

New Hampshire
Concord—Thompson & Hoarce Co.

New Jersey
Atlantic City—Cukuden Auto Supply Co., 2006 Atlantic Ave.
Newark—Times Square Auto Supply Company.
Broad near Market St.

New York
Albany—Times Square Auto Supply Company, 430 442 Broadway.
Brooklyn—Times Square Auto Supply Company, 860 Flatbush Ave.
Buffalo—James O. Barclay, 715 Main St.
Los Strauss Co., 215 Genesee St.
Times Square Auto Supply Company, 917-919 Main St.
Binghamton—C. L. & C. R. Heath Co., 28 Henry Street.
Elmira—Harker-Rose & Clinton Co., 109 Lake St.
Malone—J. D. Thompson & Co.
New York—Breckley-Ralston Co., 328 W. 54th St.
A. S. Cantin & Co., 135 Broadway.
R. K. Carter & Co., 66 Beale St.
Charfield Auto Supply Co., 312 W. 52nd St.
J. I. Picard & Co., 9 W. 41st St.
Times Square Auto Supply Company, Broadway at 54th St.
Times Square Auto Supply Company, 90 Chambers St.
Times Square Auto Supply Company, 78 Nassau St.
Rochester—Rochester Automotive Equipment Co.
Times Square Auto Supply Company, 121-123 East Saratoga Lake—Gro. L. Starke & Co.
Syracuse—The Olmsted Company, Inc.
Syracuse Auto Supply Co., 311 S. Warren St.
Yonkers—Times Square Auto Supply Company, 38 Warburton Ave.

North Carolina
Charlotte—Carolina Auto Supply House, 221 College St.
Raleigh—Interstate Motor Equipment Co., 417 Fayetteville St.

North Dakota
Fargo—J. D. Grant, 12 Roberts St.

Ohio
Cincinnati—J. I. Cooper Rubber Co., 8th & Main
Kraus Hardware Co., 518 Baymiller St.
Olney Rubber Co.
Times Square Auto Supply Company, 418 Main St.

Cleveland—Banner Tire & Supply Co., 1901 Euclid Avenue.
Euclid Auto Supply Co., 1812 Euclid Ave.
The M. & M. Company, 30 Prospect
Gro. Washington Co., 832 St. Clair Ave.
Columbus—Justin & Parker Co., 129 E. Gay St.
South Bros. Hardware Co.
Times Square Auto Supply Company, 157 S. High St.
Dayton—Dayton Iron & Steel Co., 119 E. Third Street.
Greensburg—Wagner Supply Co.
Lorain—Times Square Auto Supply Company, 804 Madison Ave.
Youngstown—Stearns-Thompson Co.

Oklahoma
Oklahoma City—J. B. Burwell Supply Co., 323 N. Broadway.
Seven Tier & Supply Co., 5th St. at Broadway.
Tulsa—Tulsa Motor Supply Co.
Times Square Auto Supply Company, 213 E. Boston St.

Oregon
Portland—Winters & Brookings, 65 6th St.

Pennsylvania
Allentown—F. Herch Hardware Co.
Erie—United Hardware & Supply Co.
Harrisburg—Front Market Motor Supply Co.
Lancaster—General Auto Supply Co., 117 E. King Street.
Philadelphia—J. H. McCullough & Son, 219 N. Broad St.
Gro. W. Nook Co., 1201 Race St.
Standard Supply & Equipment Co., Cherry & 13th St.
Suppler-Biddle-Hardware Co., 507 Commerce Street.
Times Square Auto Supply Company, Broad & Vine Sts.
Philadelphus-Philadelphus Hardware Co.
Pittsburgh—Times Square Auto Supply Company, 414 Wood St.
Pottsville—Geo. M. Biehl, 204 S. Center St.
Scranton—America Auto Supply Co.
Samuel Weinberg Auto Supply Co., 300 Penn Avenue.

Rhode Island
Providence—Waite Auto Supply Co., 64 Exchange Place.
Times Square Auto Supply Company, Fountain & Alston St.

South Carolina
Charleston—The Bailey-Libby Co., 182 Meeting Street.
Cannon & Barkley Co., 160 Meeting Street.
Columbia—Carolina Tire & Accessory Co., 201 Main.
Lott & Lowrance.

South Dakota
Sioux Falls—L. & M. Motor Supply Co.

Tennessee
Nashville—Auto Supply Co., 1107 Broadway.
Rutherford Brothers.
Reid-Summons & Co.
Memphis—Times Square Auto Supply Company, Monroe & Fourth Sts.

Texas
Beaumont—Rupert Cox Auto Supply Co., 115 Pearl St.
E. L. Wilson Hardware Co.
Dallas—Terrell Display Auto Supply Co., 209 Commerce St.
Lock Company of Texas, 2000 Commerce St.
Southern Equipment Company, Commerce & Harwood Sts.
El Paso—Wonderland Auto Supply Co., 363 Myrtle Way.
McCauley Ward Motor Supply Co.

Utah
Salt Lake City—Interoceanic Electric Co.
The Salt Lake Hardware Co.

Vermont
Rutland—Trenner Auto Supply Co.

Virginia
Danville—Owens Merritt Co.

Washington
Seattle—Ballou & Wright, 1515 12th Ave.
Spokane—Hulley-Mason Hardware Co.

West Virginia
Wheeling—T. T. Hutchison & Co., 1222 Main St.

Wisconsin
Green Bay—Morley-Murphy Hardware Co.
Chicago—Shelby, 210 E. Washington Ave.
Milwaukee—Auto Supply Co., 132 Second St.
Times Square Auto Supply Company, Corner Wells and Second St.
Wm. Frankhardt Hardware Co., 406 Jefferson St.
Western Motor Supply Co., 406 Jefferson St.

EXPORTERS
Chicago, Ill.
Commercial Export Corp., 29 Plymouth Court.

New York City
Dodge & Seymour, Ltd., 193 West St.
Chas. F. Lyngas, 46 W. Broadway.
Thomson & Company, 90-96 Wall St.

The MAT COMPANY

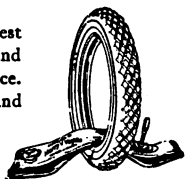
Chicago Branch—1116 Lytton Bldg.

Sole Owner and Distributor of
THE "BEST" RED TUBE
 "BEST" in Name—Best to sell—
 Best in service—Guaranteed for
 one year.

JOBBERs and DEALERs, write
 for Exclusive Territory Proposi-
 tion.

**For 14 Years the Home
 and Headquarters of
 QUALITY SECOND TIRES**

Chosen with closest
 regard to long and
 satisfactory service.
 Money Savers and
 Good-Will
 Makers.



HARRY V. VEGHTE

799 Seventh Ave. Corner 52nd St. New York
 Telephone Circle 2077-2078



Hopewell Bros., Watertown, Mass.

Send for Catalog



PROTECT AND LUBRICATE

DIXIE

—
 SEND FOR
**DIXIE
 TOOL BOOK**
 —

**Valve Seating Tool
 Valve Facing Tool
 Valve Tool Set
 Holdfast Screw Driver
 Adjustable Piston Vise
 Autoshaft Miller
 Pin Tool**

.....**FOR FORDS**.....

**Offset Wrench
 Transmission Wrench
 Motor Block Support**

MANUFACTURED BY
SOUTHERN MACHINE & TOOL CO., St. Louis, Mo.

DISTRIBUTED BY
TUTHILL SALES COMPANY, (Inc.)
KANSAS CITY, MO. ST. LOUIS, MO. DALLAS, TEXAS

Please mention The Automobile Trade Directory

MATS, Rubber (Continued)

Tiger—See Boston Woven Hose & Rubber Co.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Victor Rubber Co., Springfield, O. (See page 987.)
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

MATS, Running Board

(Small mats for attaching to running boards for cleaning feet when entering car)

A. B. C.—See American Business Corp.
 Allen—See Cushion Pedal Co.
 American Business Corp., 1780 Broadway, New York, N. Y. "A. B. C."
 Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y. "Automat."
 Automat—See Auburn Leather Goods Co.
 Bradsto Appliances, Inc., 65 Main St., Buffalo, N. Y. "Standard."
 Brockton Heel Co.—See F. A. Sales Co.
 Chamberlain Co., B. F., 184 Summer St., Boston, Mass.
 Continental Motor Equipment Co., 18 Broadway, New York, N. Y.
 Cushion Pedal Co., 287 San Fernando Blvd., Los Angeles, Calif. "Allen."
 (See page 471.)
 Darragh, Small & Co., 177 Water St., New York, N. Y.
 E. G. Mfg. Co., 250 W. 54th St., New York, N. Y. (Dealers.) (See page 643.)
 Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.
 Ever-Ready—See Wisconsin Mat Co.
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 F. A. Sales Co., 258 Fifth Ave., New York, N. Y. (Sole Distributors for Brockton Heel Co., Brockton, Mass.)
 Fernald Mfg. Co., North East, Pa.
 Franklin Rubber Co., 184 Federal St., Boston, Mass.
 General Rubber Goods Co.—See Zinke Co.
 Goliath—See Zinke Co.
 Heywood Bros. & Wakefield Co., Water St., Wakefield, Mass. "Slide-On," "Holdfast," "Safe Tread."
 Holdfast—See Heywood Bros. & Wakefield Co.
 Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.
 Koko Mat Co.—See Mooers-Wright Co.
 Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.
 Marnot Leather Mat Co., 315 Union Park Ct., Chicago, Ill.
 Mat Co., Muskegon, Mich. "Never-Slip."
 (See pages 639 and 640.)
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Mikesell Brothers Company, 156 N. La Salle St., Chicago, Ill. "Wabash."
 (See page 315.)
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Koko Mat Co., New York, N. Y.)
 (See page 187.)
 Mosler & Co., A. R., Mt. Vernon, N. Y.
 Never-Slip—See Mat Co.
 Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Ronuk—See Mikesell Brothers Co.
 Roos, Wm. A., 109 W. 225th St., New York, N. Y.

Rubber Specialty Co., 27 Cornhill St., Boston, Mass.
 Rudco—See Ruddiman Co.
 Ruddiman Co., F. G., Ionia, Mich. "Rudco."
 Safe Tread—See Heywood Bros. & Wakefield Co.
 Sanitary Wire Door Mat Co., 413 S. Lincoln St., Chicago, Ill.
 Sewell Mfg. Co., W. B., 1120 Broadway, Denver, Colo.
 Slide-On—See Heywood Bros. & Wakefield Co.
 Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.)
 (See pages 637 and 651.)
 Standard—See Bradsto Appliances, Inc.
 Standley Skid Chain Co., Boone, Iowa.
 (See page 381.)
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)
 Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 United Mat Mfg. Co., 149 Caler Ave., Jersey City, N. J.
 Wabash—See Mikesell Brothers Co.
 Wear Proof Mat Co., 500 S. Peoria St., Chicago, Ill.
 Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis. "Ever-Ready."
 "X" Laboratories, 25 W. 45th St., New York, N. Y.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for General Rubber Goods Co., Cleveland, O. "Goliath.")

MATS, STEP—See Mats, Running Board**MATTING, Aluminum**

(Stamped aluminum matting for covering floor or running boards)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Erdle Perforating Co., 171 York St., Rochester, N. Y. "Pyrama."
 (See page 647.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Pyramid—See Spiro Mfg. Co.
 Pyrama—See Erdle Perforating Co.
 Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico."
 Rico—See Richards & Co.
 Spiro Mfg. Co., C., 68-72 E. 181st St., New York, N. Y. "Pyramid."
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)

MATTING, LINOLEUM—See Linoleum**MATTING, RUBBER—See Mats, Rubber****MATTRESSES, Pneumatic**

Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "Perfection."
 (See page 303.)
 Perfection—See Atlantic & Pacific Mfg. Co.

MEASURES, METAL—See Funnels and Measures, Metal**MEASURING MACHINES—See Machines, Leather Measuring**

Everything is listed under the NOUN or principal word

At the Pinnacle

far beyond the power of words
"the survival of the fittest"

"HERCULES

Aluminum Solder"

"Best by Test"

THE FINEST ALUMINUM SOLDER
MANUFACTURED AND THE
MOST ECONOMIC
TO USE

The standard by which all others are
judged

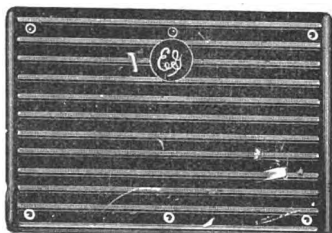
Manufactured and Exported solely by
Hercules Manufacturing Co.
105 West 40th Street, New York

N. B.—Send for Trial Bar, \$1.00
each. Postpaid anywhere in the
United States. Money refunded if
not entirely satisfactory.

*Some Territory Still Open to Live
Agents Who Can Produce Results*



Running Board Mats



Made of the very best quality of
non-blooming rubber stock. Wide
corrugations—which prevents slip-
ping of the heel; easily kept clean.
Beautiful in design, durable and in-
expensive.

List Price \$1.50

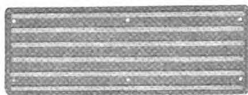
E. G. Manufacturing Co. Inc.
250 W. 54th St., New York City

Stanwood Products



**ADJUSTABLE ACCELERATOR
FOOT REST**, a reliable safety de-
vice. Prevents unintentional ac-
celeration when driving over rough
roads. Permits delicate advance-
ment or retarding of accelerator.
Relieves foot tension. Adjustable
to driver's comfort, adaptable to
all automobiles. List, \$1.60 each.

SAFETY STEP PLATES, rubber vulcanized to a per-
forated metal plate, 24 projecting solid rubber ribs. Size
8x11 1/4 inches. Keeps car clean. Assures safety. Adds
to car refinement. Quickly applied. Will not mat down
or discolor. Type C, List, \$1.60.



ACCELERATOR HEEL PLATE is same as Type C
Step Plate, except in size, which is 4x11 1/4 inches.
Furnishes a stable position for heel of shoe when
operating pedal, and protects floor covering. List,
\$0.85.

CONFORMABLE HAND PAD for auto doors, consists
of a ductile metallic sheet enclosed between front and
back leather sections of the pad, insuring through pres-
sure of the hand, perfect conformity to the contour of
door. Prevents finger marks and wear. Leather in
various grains. Price \$0.90 to \$1.80 each.

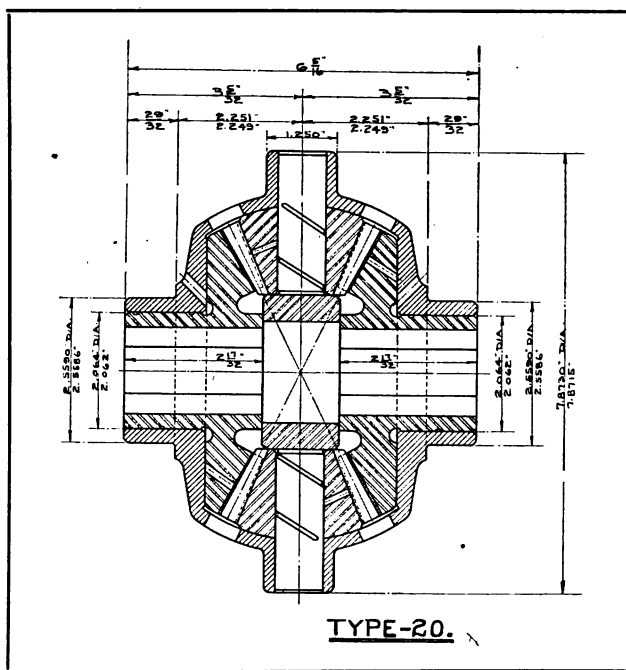


STANWOOD EQUIPMENT COMPANY
308 NO. MICHIGAN BLVD. CHICAGO, ILL.

Please mention The Automobile Trade Directory

- MECHANICAL BELLS**—See Bells, Mechanical
- MECHANICAL CLEANERS**—See Cleaners, Glass Wind Shield
- MECHANICAL ENGINE STARTERS FOR FORDS**—See Starters, Mechanical or Spring Engine
- MECHANICAL HORNS**—See Horns, Mechanical
- MECHANICS' BLUE**—See Blue, Mechanics'
- MECHANICS' GOGGLES**—See Goggles, Mechanics' and Welders'
- MEDICAL EMERGENCY CASES**—See Cases, Medical
- MERCURY RECTIFIERS**—See Rectifiers, Alternating Current
- METAL BODIES**—See Bodies, Metal
- METAL CEMENT**—See Cement, Cast Iron
- METAL DASHES**—See Dashes, Metal
- METAL DISC WHEELS**—See Wheels, Metal Disc
- METAL FLOATS**—See Floats, Metal
- METAL FUNNELS**—See Funnels and Measures, Metal
- METAL GASKETS**—See Gaskets, Metallic
- METAL GEARS**—See Gears, Metal
- METAL HOSE**—See Tubing, Flexible Metallic
- METAL LACQUERS**—See Laquers, Metal
- METAL LINED HOSE**—See Hose, Metal Lined
- METAL LOCKERS**—See Lockers, Metal
- METAL MEASURES**—See Funnels and Measures, Metal
- METAL MUD GUARDS**—See Fenders or Mud Guards, Metal
- METAL PINIONS**—See Gears and Pinions, Metal
- METAL PLANERS**—See Planers, Metal
- METAL POLISHES**—See Polishes, Metal
- METAL PRESSINGS**—See Stampings
- METAL RACKS**—See Racks, Metal Tool, Stock and Tire
- METAL RADIATOR COVERS**—See Shutters, Metal Radiator
- METAL SEAT BACKS**—See Backs, Metal Seat
- METAL SHAPERS**—See Shapers, Metal
- METAL SHELVING**—See Racks, Metal Tool, Stock and Tire
- METAL STAMPINGS**—See Stampings and Pressings, Metal
- METAL TESTING INSTRUMENTS**—See Instruments, Metal Testing
- METAL TESTING MACHINES**—See Machines, Metal Testing
- METAL TOOL BOXES**—See Boxes, Wood Tool
- METAL TRIMMINGS**—See Trimmings, Metal
- METAL TRUCK CABS**—See Cabs, Metal Truck
- METALLIC GASKETS**—See Gaskets, Metallic
- METALLIC GASKETS FOR FORDS**—See Gaskets, Cylinder Head
- METALS, Bearing**
- Acorn—See Cadman Mfg. Co.
- Adamant—See Magnolia Metal Co.
- Aetna Brass & Bronze Co., 1681-85 E. 56th St., Cleveland, O.
- Ajax Metal Co., Philadelphia, Pa.
- Albani—See Cox Brass Mfg. Co.
- Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O.
- American Brass Co., Waterbury, Conn. (See page 165.)
- American Bronze Corp., Berwyn, Pa. "Non-Gran." (See page opposite Inside Front Cover.)
- American Bronze Co., 90-108 Arthur St., Buffalo, N. Y. "Grainless."
- American Manganese Bronze Co., (Holmesburg), Philadelphia, Pa. "Spare's."
- American Non-Ferrous Metals Corp., Chester, Pa. "Cop-Led."
- Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "WB."
- Atlas Brass Foundry Co., Columbus, O. (See page 603.)
- Auto-Crat—See Syracuse Smelting Works.
- Axales—See Vanadium Metals Co.
- Bear Well—See Chicago Hardware Foundry Co.
- Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. "Wisard." (See page 647.)
- Blake, Edwin J., 545 Windsor St., Hartford, Conn.
- Blatchford Co., E. W., 230 N. Clinton St., Chicago, Ill.
- Bound Brook Oil-less Bearing Co., Bound Brook, N. J. (See page 309.)
- Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
- Bronze Metal Co., Meadville, Pa. "Vim."
- Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 179.)

Everything is listed under the NOUN or principal word



WE are offering quality differentials especially designed for worm driven axles. Made in sizes to suit any size axle.

Used for years by some of the leading axle builders.

We will be glad to quote on any other differential or bevel gear work.

Our plant, absolutely new and modern in every respect, is at the disposal of those who want quality work.

We solicit your inquiries.

Cross Gear & Engine Company

**3260 Bellevue Avenue
DETROIT, MICHIGAN**

METALS, Bearing (Continued)

- Cadman Mfg. Co., A. W., 2314-16 Smallman St., Pittsburgh, Pa. "Acorn."
 Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.
 Chamet—See Chase Rolling Mill Co.
 Chase Rolling Mill Co., Grand St., Waterbury, Conn. "Chamet."
 Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill. "Bear Well."
 Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 1003.)
 Cleveland Graphite-Bronze Co., Cleveland, O. "Dannite." (See page 391.)
 Climax—See North American Smelting Co.
 Clover Leaf—See Williams & Son.
 Columbia Smelting & Refining Works, 365-67 West St., New York, N. Y.
 Columbian Brass Foundry, Freeport, N. Y. "Excello."
 Cop-Led—See American Non-Ferrous Metals Corp.
 Copalay—See Michigan Smelting & Refining Co.
 Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.
 Cox Brass Mfg. Co., Albany, N. Y. "Albase." (See page 171.)
 Cramp & Sons Ship & Engine Building Co., William, Philadelphia, Pa. "Parsons." (See page 209.)
 Dannite—See Cleveland Graphite-Bronze Co.
 Dayton Bronze Bearing Co., 916-18 E. Third St., Dayton, O.
 Defreville, J., 142 McWhorter St., Newark, N. J.
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Dutch Boy—See National Lead Co.
 Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.
 Elephant—See Phosphor Bronze Smelting Co.
 Emco—See Empire Metal Co.
 Empire Metal Co., 820 E. Water St., Syracuse, N. Y. "Premier," "Triumph," "Emco."
 Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 231.)
 Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.
 Eureka Co., North East, Pa.
 Excello—See Columbian Brass Foundry.
 Excelsior—See Wildes Son, Thomas.
 Fahrig Metal Co., 84 Commerce St., New York, N. Y. (See page 647.)
 Frictionless Metal Co., 1103-05 Chestnut St., Chattanooga, Tenn.
 Gardner Metal Co., 1368 W. Lake St., Chicago, Ill.
 General Aluminum & Brass Mfg. Co., Detroit, Mich. (See page 203.)
 General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenax." (See page 219.)
 Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 107.)
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for Johnson Metals.) (See page 853.)
 Graham & Co., James, 292 Wooster St., New Haven, Conn.
 Grainless—See American Bronze Co.
 Great Western Smelting & Refining Co., 41st & Wallace Sts., Chicago, Ill.
 Harper, Thomas, 204 Lafayette St., New York, N. Y. "Hi-Servis."
 Hayman & Co., Michael, 856 E. Ferry St., Buffalo, N. Y.
 Hecla—See Paulson & Son.
 Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.
 Hi-Servis—See Harper, Thomas.
 Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.
 Howard Metal Co., Second & Canal Sts., Reading, Pa.
 Hoyt Metal Co., St. Louis, Mo. "Trojan." (See page 201.)
 Hub—See Richards & Co.
 Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. "Vitaloy." (See page 205.)
 Ideal—See Murphy Metals Co.
 Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.
 Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.
 Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."
 Johnson Bronze Co., New Castle, Pa. (See page 151.)
 Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."
 Kelly—See Super-Refined Metals Co.
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Kmco—See Kramer & Co.
 Kramer & Co., H., 21st Pl. and Loomis St., Chicago, Ill. "Kmco." (See page 647.)
 Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.
 Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
 Lissberger & Son, Marks, 281 Borden Ave., Long Island City, N. Y.
 Lumen Bearing Co., Buffalo, N. Y. (See page 231.)
 Lynux—See Aluminum Castings Co.
 McGill Metal Co., Valparaiso, Ind.
 McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
 Magnolia Metal Co., 118-15 Bank St., New York, N. Y. "Adamant."
 Malumium Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.
 Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.
 Master—See Murphy Metals Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Silver Genuine."
 Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich. "Copalay."
 Mogul Metal Co., Detroit, Mich. (See page 109.)
 More-Jones Brass & Metal Co., 3122-44 N. Broadway, St. Louis, Mo.
 Motex—See Jacobson & Sons Co.
 Murphy Metals Co., 2837 S. Halsted St., Chicago, Ill. "Ideal," "Old Reliable," "Master."
 Mussey-Lyon Co., Detroit, Mich. (See page 109.)
 Nabralco—See National Bronze & Aluminum Foundry Co.
 National Bronze & Aluminum Foundry Co., 2529 E. 78th St., Cleveland, O. "Nabralco."
 National Lead Co., 111 Broadway, New York, N. Y. "Dutch Boy." (See page 211.)
 Non-Gran—See American Bronze Corp.
 North American Smelting Co., 900 W. Thompson St., Philadelphia, Pa. "Vulcan," "Philadelphia," "Climax."
 Oberdorfer Brass Co., M. L., 204 E. Water St., Syracuse, N. Y.
 Old Reliable—See Murphy Metals Co.
 Owosso Bronze Bearing Co., Owosso, Mich.
 Parsons—See Cramp & Sons.
 Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y. "Hecla."

Everything is listed under the NOUN or principal word

PYRMA**ALUMINUM MATTING****STRONGEST IN SERVICE AND LOWEST IN COST**

Stock sizes for 25 ft. rolls are 9, 10, 12, 14, 15, 18 and 20 inch widths; for 24 ft. rolls 24, 30 and 36 inch widths. Of course special lengths and widths can always be supplied.

ALUMINUM MOULDING

J-shape running board moulding in 18 ft. lengths in stock for immediate delivery.

ALUMINUM HEEL PLATE

Made of special extra heavy aluminum that lasts longer than the car.

Write for samples of matting and moulding.

Manufacturers—Get our attractive prices on quantity lots of matting, moulding or heel plates—all made of aluminum.

Dealers and Jobbers—Good profits are yours—if you push these articles.

WRITE—TODAY—FOR SAMPLES.

ERDLE PERFORATING COMPANY

171 York Street,

Rochester, New York

KMCO**THE PERFECT BEARING METAL**

**DIE CAST
METALS**

**BRASS
INGOTS**



**PIG LEAD
SPELTER**

**SMELTERS
and REFINERS**

H. KRAMER & COMPANY

21st Place and Loomis St.

CHICAGO, ILL

FAHRIG ANTI-FRICTION METAL

The Best Bearing Metal on the Market

**Fine
Anti-Friction
Qualities
and Great
Durability**



**Given
Satisfactory
Service
Under All
Conditions**

Will run cool with minimum wear in any connecting rod or crank shaft bearing.
Handles like any high grade babbitt.

FAHRIG METAL CO., 34 Commerce Street,

New York

**WIZARD BRONZE**

The Choice of Discriminating Mfrs.

Do you require bronze for strength? Use our **WIZARD MANGANESE BRONZE**.
Do you require rust-proof bronze? Use our **NICKEL ALLOY WIZARD BRONZE**.
Do you require bronze for durability? Use our **WIZARD PHOSPHOR BRONZE**.

Each recognized as the best in its class. Write us and we will prove our claims for WIZARD.

S. BIRKENSTEIN & SONS, Inc.

1032 W. North Ave.
Chicago

New York
Times Bldg.

25th & Ellsworth Sts.
Philadelphia, Pa.

Temple Court Bldg. Minneapolis, Minn.

Please mention The Automobile Trade Directory

METALS, Bearing (Continued)

Philadelphia—See North American Smelting Co.
 Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant."
 Pittsburgh White Metal Co., 2116 Penn Ave., Pittsburgh, Pa. "Rinehart."
 Premier—See Empire Metal Co.
 Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.
 Revolution—See Sanford Co.
 Rhoades & Co., R. W., 15-17 West Ave., Long Island City, N. Y.
 Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico," "Hub."
 Rico—See Richards & Co.
 Rinehart—See Pittsburgh White Metal Co.
 Rowell Mfg. Co., Union & Hancock Sts., Appleton, Wis.
 Sanford Co., David C., 23-29 Drouve St., Bridgeport, Conn. "Revolution."
 Seaboard Metal Corp., 221 Randolph Ave., Jersey City, N. J.
 Semper Idem—See Wildes Son.
 Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
 Shonberg, I., 122 Flushing Ave., Brooklyn, N. Y. "Bear."
 Silver Genuine—See Merchant & Evans Co.
 Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
 Spars's—See American Manganese Bronze Co.
 Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
 Stanley—See Syracuse Smelting Works.
 Super-Refined Metals Co., 2631 Woodward Ave., Detroit, Mich. "Kelly." (See page 649.)
 Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
 Syracuse Smelting Works, 192 Diamond St., Brooklyn, N. Y. "Auto-Crat," "Stanley."
 T. B. C.—See Titanum Bronze Co.
 Tenax—See General Bronze Foundry Co.
 Thiery & Kendarik Mfg. Co., Detroit, Mich. (See page 221.)
 Titan Metal Co., Allegheny St., Bellefonte, Pa.
 Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
 Triumph—See Empire Metal Co.
 Trojan—See Hoyt Metal Co.
 U. S. Reduction Co., East Chicago, Ind.
 U. S. A.—See United Smelting & Aluminum Co.
 United American Metals Corp., 192 Diamond St., Brooklyn, N. Y.
 United Smelting & Aluminum Co., 123-29 Commerce St., New Haven, Conn. "U. S. A."
 Vanadium—See Enterprise Metal Co.
 Vanadium Metals Co., Vanadium Bldg., Pittsburgh, Pa. "Amal."
 Victory—See Kahn Bros.
 Vim—See Bronze Metal Co.
 Vitaloy—See Ideal Bronze Co.
 Vulcan—See North American Smelting Co.
 W. B.—See Anderson Foundry Co.
 Wellman Bronze Co., 6017 Superior Ave., Cleveland, O.
 Wensley Metal Products Co., 18th & Blake Sts., Denver, Colo.
 Werne—See General Bronze Foundry Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 70.)
 Wildes Son, Thomas, 339 Fifth Ave., New York, N. Y. "Semper Idem," "Excelsior."
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 83.)

Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J. "Clover Leaf."
 Wizard—See Birkenstein & Sons.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

METALS, DEALERS IN—See Steel, Dealers in

METERS, AIRPLANE ALTITUDE—See Altimeters; Also Barographs

METERS, AMPERE—See Ammeters and Voltmeters; also Gages, Battery

METERS, COMPRESSION—See Gages, Cylinder Compression

METERS or ODOMETERS, Distance Recording

(For combined Odometers and Speedometers—See Speedometers)

American Taximeter Co., 18 W. 61st St., New York, N. Y. "Dreadnaught."
 Coronet—See Baumgartner, F.
 Dreadnaught—See American Taximeter Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Veeder Mfg. Co., 23 Sargeant St., Hartford, Conn. (See page 649.)

METERS OR ODOMETERS, Distance Recording, for Fords

(See also Speedometers and Odometers)

J.-M.—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J.-M."
 Veeder Mfg. Co., 23 Sargeant St., Hartford, Conn. (See page 649.)

METERS, Gasoline or Oil

(For use in connection with Gasoline or Oil Storage Systems to indicate or record the amount drawn out)

Bowser & Co., S. F., Fort Wayne, Ind.
 Buffalo Meter Co., 2823 Main St., Buffalo, N. Y. "Niagara."
 Niagara—See Buffalo Meter Co.
 Tokheim Oil Tank & Pump Co., Wabash Ave. & Wabash R.R., Fort Wayne, Ind.

METERS, GASOLINE CONSUMPTION—See Gages, Vacuum Tank

METERS, Grade

(For attaching to car to indicate degree of grades)

Adams Co., 295 Sixth St., Dubuque, Ia. "Gradometer."
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
 Gradometer—See Adams Co.
 Hillmeter—See Meteor Sales Corp.
 Meteor Sales Corp., 140 W. 68th St., New York, N. Y. "Hillmeter."
 Weinhausen & Hespe, 159-65 Leonard St., New York, N. Y.

Everything is listed under the NOUN or principal word

BRONZE

**Rough and Finished Castings
Cored and Solid Bars**

KELLY METAL

**70% Copper—30% Lead
Rough and Finished Castings**

BABBITT METAL

Two Grades



Super-Refined Metals Company

DETROIT

**2631 Woodward Ave.
Telephone Cherry 6587**

CHICAGO

5 South Wabash Ave. Tel. State 5664

LOS ANGELES

315 West Ave. 33 Telephone 31-459

Veeder



**HUB
ODOMETER**

Records truck mileage with the necessary accuracy to show *exact costs* for every mile traveled—and for every item, such as fuel, oil, tires, battery-maintenance and repairs. Registers up to 100,000 miles in tenths of a mile, then repeats. Seals onto front hub; cannot be made to register falsely. In ordering, mention the make, model, year of manufacture of truck and size of front wheel.

Always registers miles forward, whether truck runs forward or backward. Regular model, price \$20. Special model for FORD trucks, \$15. Write for brief literature.

THE VEEDER MFG. CO.

22 Sargeant St.

Hartford, Conn.

New York Distributors
Guinlan-Treiber Corp.
8 Columbus Circle

Chicago Distributors
F. A. Bringolf,
550 Washington Blvd.

Detroit Distributors
Geo. F. Balk Sales Co.
9 Selden Street

Philadelphia Distributors
Crown Auto Specialties
Co., 1611 Vine St.

California Distributors

F. Somers Peterson Co., 57 California St.,
San Francisco

MOTOR CAR SPRINGS

Our large and highly specialized spring coiling and forming equipment, together with our facilities for drawing and heat treating our own wire, from either carbon or alloy steel, make us the logical source of supply for the motor car and accessory manufacturers.

Our Engineering Department will be glad to lend you any assistance possible. Write our nearest office regarding your requirements.

Wickwire Spencer Steel Corporation

**Worcester, Mass.
Buffalo, N. Y.**

District Offices and Warehouses:

256 Franklin St.	Boston, Mass.
120 Broadway	New York, N. Y.
237 N. Sixth St.	Philadelphia, Pa.
Book Bldg.	Detroit, Mich.
33 W. Austin Ave.	Chicago, Ill.
Mayo Bldg.,	Tulsa, Okla.
111 Townsend St.	San Francisco

Please mention The Automobile Trade Directory

METERS, HEAT INDICATING — See Meters, Water Temperature Indicating

METERS, Magnet

(For investigating or testing the magnetic qualities of permanent magnets)

Holz, Herman A., 17 Madison Ave., New York, N. Y.

METERS, Magneto, for Fords

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Pennacook, N. H.) (See pages 81 and 1007.)

Eeco—See Electric Equipment Co.

Electric Equipment Co., 1340 S. Hope St., Los Angeles, Cal. "Eeco."

Hoyt Electrical Instrument Works—See Burton-Rogers Co.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 375.)

METERS, OIL—See Meters, Gasoline

METERS, Oil Temperature Indicating

(For indicating the temperature of the lubricating oil)

Climax Motor Devices, Chagrin Falls, O. (See pages 409 and 705.)

Moto-Meter Co., Long Island City, N. Y. (See page 651.)

METERS, SPEED—See Speedometers

METERS, TAXI—See Taximeters

METERS, Truck Load Indicating

Auto Loadmeter, Rockville Centre, N. Y.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Loadometer."

Camman Laboratories Co., 43 W. 39th St., New York, N. Y. "Carsafe."

Carsafe—See Camman Laboratories Co.

Loadometer—See Black & Decker Mfg. Co.

Tractometer Co., Slauson & Santa Fe Aves., Los Angeles, Cal.

METERS, VACUUM TANK—See Gages, Vacuum Tank

METERS, VOLT—See Ammeters and Volt- meters; also Gages, Battery

METERS, Water Temperature Indicating

(For attachment to radiator or dash to show temperature of cooling water)

A. E. M.—See Moeller, A. E.

Autostat—See Moeller, A. E.

Boyce Moto-Meter—See Moto-Meter Co.

Foxboro Co., Neponset Ave., Foxboro, Mass.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco." Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 573.)

Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M.," "Autostat." (See page 535.)

Moto-Meter Co., Long Island City, N. Y. "Boyce Motometer." (See page 651.)

Motor Eye—See Metalware Corp.

National Gauge & Equipment Co., La Crosse, Wis. "Radi-Meter." (See page 425.)

Radi-Meter—See National Gauge & Equipment Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. "Warn-O-Meter." (See page 1003.)

Warn-O-Meter—See Stewart-Warner Speedometer Corp.

METERS, Water Temperature Indicating, for Fords

(For attachment to radiator to show temperature of cooling water)

Boyce Moto-Meter—See Moto-Meter Co.

Moto-Meter Co., Long Island City, N. Y. "Boyce Motometer." (See page 651.)

MICA SHEETS, TUBES, WASHERS and CORES

American Mica Co., Newton Lower Falls, Mass.

Asheville Mica Co., Biltmore, N. C.

Charland & Co., E. W., 216 Main St., Tilton, N. H.

Chicago Mica Co., Lincoln & Campbell Sts., Valparaiso, Ind. "Mica-Bond."

Granite State Mica Co., 63 Gorham St., West Somerville, Mass.

Mica Mfg. Co., 135 Johnson St., Brooklyn, N. Y.

Micabond—See Chicago Mica Co.

Munsell & Co., Eugene, 63 Church St., New York, N. Y.

New England Minerals Co., 67 Milk St., Boston, Mass. "Yankee."

Ray-O Mfg. Co., 246-52 Fulton St., Brooklyn, N. Y.

Richmond Mica Co., 801 E. Main St., Richmond, Va. "Silver Sheen."

Schoonmaker Co., A. O., 33 Park Pl., New York, N. Y.

Tar Heel Mica Co., Plumtree, N. C.

Watson Bros., 170 Purchase St., Boston, Mass.

Yankee—See New England Minerals Co.

MICA, TIRE—See Talc, Tire

MICROMETER CALIPERS

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Coats Machine Tool Co., 30 Church St., New York, N. Y. "Prestometer."

Columbia—See Smith, E. G.

Goodell-Pratt Co., Greenfield, Mass.

International Co-Operative Tool & Machinery Co., 1512 24th Ave., Oakland, Cal.

Prestometer—See Coats Machine Tool Co.

Reed Small Tool Works, 143 June St., Worcester, Mass.

Everything is listed under the NOUN or principal word



Standard Model...\$10.00

BOYCE MOTO METER

Get These Sales Promoters

EVERY dealer who orders from his jobber 10 or more assorted Boyce Moto-Meters, for delivery at one time, receives these proved sales winners without cost:

A handsome metal sign in colors, announcing free installation of Boyce Moto-Meters—the famous Moto-Meter display stand—and an attractive free-dial-offer display board. Ask your jobber.

The Moto-Meter Company, Inc.

Long Island City

NEW YORK

List of Other Models and Prices

De Luxe Model...\$15.00
Universal Model... 7.50
Junior Model 5.00
Midget Model.... 2.50
Spec. Ford Model. 3.50



Trump Manufacturing Co.

Crown Point, Indiana

MAKERS OF

TRUMP PISTON RINGS for FORDS

THEY GIVE UNIVERSAL SATISFACTION—MADE IN OUR
OWN PLANT FROM RAW MATERIALS

J. Wadsworth Staff
122 S. Michigan Ave., Chicago
SALES REPRESENTATIVE

Please mention The Automobile Trade Directory

MICROMETER CALIPERS (Continued)

Slocumb Co., J. T., 35 Oxford St., Providence, R. I.
 Smith, E. G., 316 W. Park Ave., Tampa, Fla. "Columbia."
 Starrett Co., L. S., Athol, Mass.

MILEAGE INDICATORS—See Motors, Distance**MILLING ATTACHMENTS—See Attachments, Lathe Milling****MILLING COMPOUNDS—See Lubricants, Cutting****MILLING CUTTERS—See Cutters, Milling****MILLING MACHINES—See Machines, Milling****MILLS, BORING—See Machines, Boring****MILLS, DRY SHAFT BEARING END for Fords**

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

MILLS, STEERING KNUCKLE BUSHING for Fords

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

MINIATURE INCANDESCENT LAMPS—See Lamps, Miniature Incandescent**MIRROR REFLECTORS—See Reflectors, Mirror Lamp****MIRRORS, Adjustable Windshield, Dashboard and Fender**

(To enable driver to see to the rear of the car)

Accessory Supply Co., 1218-20 E. 12th St., Kansas City, Mo. "Asco."
 Asco—See Accessory Supply Co.
 Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y. "Mirrorscope."
 American Auto Lamp Co., Union Hill, N. J. (See page 557.)
 Amesbury Bent Glass Co., Amesbury, Mass.
 Arkay—See Riley-Klotz Mfg. Co.
 Auto Mirror & Mfg. Co.—See Oettinger Corp.
 Automotive Accessories—See Fulton Co.
 Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Recto."
 Autoscope—See Oettinger Corp.
 Autoscope—See Whitehouse Mfg. Co.
 Beedee Distributing Service, 813 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal. (See page 1003).
 Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Cop-Spotter." (See page 655.)
 Brewer Tichener Corp., Cortland, N. Y. "Pioneer." (See page 573.)

Britton Sales Co., 161 Columbus Ave., New York, N. Y.

C-S—See Culver-Stearns Mfg. Co.

C-Bak—See International Sales Corp.

Chesler & Son Co., J., 147 Gratton St., Brooklyn, N. Y.

Clearview—See D'Eyraud, Louis.

Cop-Spotter—See Berger & Co.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview." (See page 249.)

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

Elbe Motor Products Co., 414 W. Pico St., Los Angeles, Cal. "Speedascope."

Essandee Corp., 830 W. 16th St., Los Angeles, Cal. "Rearsite." (See page 655.)

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Automotive Accessories, Kokomo, Ind. "Rearvu.") (See page 1018.)

G. W.—See Gartley-Weston Mfg. Co.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "G. W."

Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash. "See-Bak."

Hindview—See Kales Stamping Co.

Hoco—See Hocht & Co.

Hocht & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."

International Sales Corp., 311 Fairfield Ave., Bridgeport, Conn. "C-Bak."

Johnson Mfg. Co., William R., 451-469 E. Ohio St., Chicago, Ill. (See page 659.)

Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich. "Hindview."

Kaufman & Sons, Chas., 1623 E. First St., Santa Ana, Cal.

Kilborn-Sauer Co., Post Road, Fairfield, Conn.
 Krimsy, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Lawson Auto Specialty Co., 47 Bergen St., Brooklyn, N. Y. "Reflectoscope."

Liberty Works, Egg Harbor City, N. J. (See page 555.)

Manhattan Mirror Works, 46-50 Wooster St., New York, N. Y.

Mirror Park-Lite Corp., 208 W. 17th St., New York, N. Y. "Ny-El-Co." (See page 655.)

Mirrorscope—See Alexander Mfg. Co.

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Neverout—See Rose Mfg. Co.

Ny-El-Co.—See Mirror Park-Lite Corp.

Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Auto Mirror & Mfg. Co., New York, N. Y.) "Autoscope," "Rear Flex." (See page 427.)

Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."

Perko—See Perkins Marine Lamp Corp.

Pioneer—See Brewer Tichener Corp.

Rearsite—See Essandee Corp.

Rearometer Co., 25 W. 45th St., New York, N. Y.

Rearvu—See Fulton Co.

Rear Flex—See Oettinger Corp.

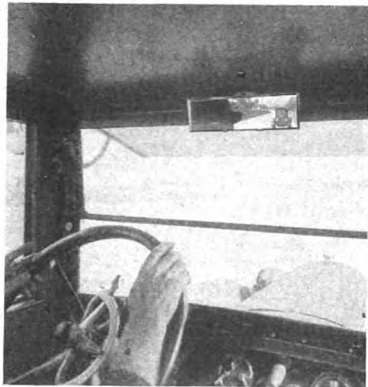
Reflecto—See Unbreakable Mirror Co.

Reflectoscope—See Lawson Auto Specialty Co.

Retco—See Automotive Supply Mfg. Co.

Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Everything is listed under the NOUN or principal word

JOHNSTON!**Rear Vision Mirrors**

Johnston Rear Vision Mirrors provide an opportunity for sales never before enjoyed by jobbers and dealers.

Types A, B and C, made with solid cast brass adjustable bracket heavily nicked. Have 5x10 in. Belgian Silvering quality plate glass mirrors, silvered with non-oxidizing silver. Types D and E have same quality mirror but are steel-stamped and black eggshell finish.

Type C-1, same type bracket as C, with flange horizontal instead of vertical, for installation on roof of closed cars, such as Franklin and others with pointed front. Price of A, B, C and C-1, \$5.00; D and E, \$3.00. Send for folder showing complete line and all information.

JOHNSTON**Clear Vision Windshield Wings**

Jobbers and dealers consider Johnston Clear Vision Windshield Wings as the best and only real sales proposition in the Windshield Wing line.

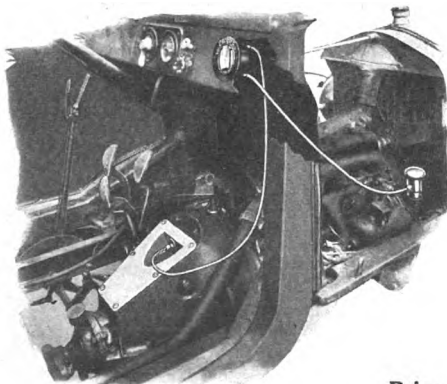
Combination black and nickel finish—all steel parts Parkerized and with black eggshell finish. All other parts heavily nicked.

Made in three sizes: 10x18, 10x20 and 10x22 inch. Four types of brackets: A, B, C and D. Prices as follows: 18, 20 and 22 inch, with Type A, B and C bracket, \$25.00 per pair. With Type D bracket, \$27.50 per pair. Write for specification list, showing size of wing and type of brackets required.

Johnston Sight Feed Oiler For Fords

A positive force-feed system—simple and cannot get out of order.

A stream of oil continually circulating through gauge on dash right before your eyes—lubricating every part, preventing burned out bearings, connecting rods and scored cylinders. This system keeps a Ford lubricated, even when regular system is clogged.



Can be installed on any Ford Car or Truck in a few minutes.

Sold under an absolute satisfaction guarantee or money back.

Send for descriptive folder.

Price complete \$10.00.

MANUFACTURED BY

WM. R. JOHNSTON MANUFACTURING CO.

451-469 EAST OHIO STREET, CHICAGO

MAKERS OF THE FAMOUS

Johnston Standard Plain Type and
Winter Enclosure Windows

CATALOG AND PRICES
ON REQUEST

TRADEMARK



REGISTERED

Please mention The Automobile Trade Directory

MIRRORS, Adjustable Windshield, Dashboard and Fender (Contd.)

Rosco—See Rosen & Co.
 Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 563.)
 Rosen & Co., A. W., 810-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 See-Bak—See Hardware Mfg. Co.
 Sees-Al Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.
 Speedascope—See Elbe Motor Co.
 Starr Bros. Bell Co., East Hampton, Conn.
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
 Unbreakable Mirror Co., Hackettstown, N. J. "Reflecto."
 W. B.—See Wildenberg Bros.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. "Autoscope."
 (See page 79.)
 Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

MIRRORS, COWL LIGHT REFLECTING

(Small mirror to mount near instruments to reflect light from dash or cowl light on them)

Cole Visible Gas Gauge Co., 1364 S. Figueroa St., Los Angeles, Cal.

MIRRORS, Water Gage

(To make possible the reading of water gages on steam cars from the seat)

Knox Co., Frank J., Hartford, Conn.

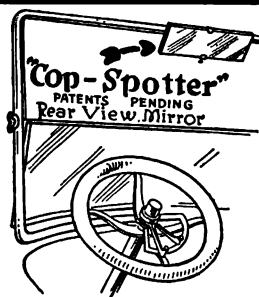
MITTENS, AVIATORS—See Gloves and Mittens, Aviators

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES

Aerodyn—See Standard Auto Mfg. Co.
 Aerofram Co., 107 Massachusetts Ave., Boston, Mass.
 Air-O-Gas Mixer Co., 526 W. Ninth St., Los Angeles, Cal.
 Alliance Co., 45 W. 34th St., New York, N. Y. "Hugill."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Liti-Fiend."
 Anglo American Aerator Co., Monadnock Bldg., San Francisco, Cal. "Howes."
 Asch & Co., Inc., 18-24 W. 61st St., New York, N. Y. "Bailey." (See page 243.)
 Automotive Mfg. Co., 114-16 E. Fourth St., Dayton, O. "York."
 Automotive Products Co., 112 Market St., San Francisco, Cal.
 Bailey—See Asch and Co., Inc.
 Ball & Ball—See Penberthy Injector Co.
 Barnes, W. Porter, 103 Roberts Ave., Santa Rosa, Cal. "Powerene."
 Bee & Gee Co., 1414 Broadway, New York, N. Y.
 Boucher, Geo. S., Damascus, Va.
 Brown-Taylor-Greene Co., 1323-25 S. Michigan Ave., Chicago, Ill. "Empire."
 C. B.—See Bailey Co.
 Carburetor Mantle Co., 1926 Broadway, New York, N. Y.

Clemmer, G. H., West Alexandria, O.
 Conservo Sales Co., 225 Fifth Ave., New York, N. Y.
 Coolidge, Lee, 325 Glisan St., Portland, Ore.
 Cumming Forster Corp., 230 S. State St., Chicago, Ill. "West."
 D. & P. Auto Repair Co., 1926 Broadway, New York, N. Y.
 Daddy Vaporizer Co., 1317 Maumee Ave., Fort Wayne, Ind.
 Dempsey Cycle Co., Perry Bldg., Philadelphia, Pa.
 Deppe Motors Corp., 151 Church St., New York, N. Y. "Stanley."
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Jumbo."
 Elder Mfg. Co., 2505 N. Illinois St., Indianapolis, Ind. "Radio."
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 Flintham & Gilstrap Co., 908 E. Fourth St., Topeka, Kans. "Votalizer."
 Gasco—See Gasket Supply Co.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Gasco."
 Gasolater—See Martin-Lumghi Mfg. Co.
 Gassave—See Leathers Bros. Co.
 Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.
 Hard Mfg. Co., Tonawanda St., Buffalo, N. Y. "Superfactor."
 Hine-Watt Mfg. Co., 1725 S. Michigan Ave., Chicago, Ill. "Sly."
 Hoosier Sub-Carburetor Co., 309 N. Illinois St., Indianapolis, Ind.
 Howes—See Anglo American Aerator Co.
 Hugill—See Alliance Co.
 Ieco—See Interstate Electric Co.
 Jumbo—See Edelmann & Co.
 Kelley, J. M., 80 N. Water St., Rochester, N. Y.
 Kero-Mix—See Patterson, F. W.
 Kraus & Kraus, 114 E. State St., Marshall, Mich.
 Leathers Bros. Co., Howard, Pa. "Gassave."
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Liti-Fiend—See American Automobile Accessories Co.
 Lydon Mfg. Co., 108 N. Wabash Ave., Chicago, Ill. "Speedler."
 M. & M. Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 977.)
 M & M Sales Co., Lewiston, Pa.
 Martin Shock Absorber Corp., 1801-1401 E. Slauson Ave., Los Angeles, Cal.
 Mix-O-Look—See National Motor Supply Co.
 Motor Parts Co., Ambridge, Pa.
 Patterson, F. W., 326 E. 43d St., Chicago, Ill. "Kero-mix."
 Peck, M. C., 423 Third St., San Bernardino, Cal.
 Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 561.)
 Parrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.
 Powerene—See Barnes, W. Porter.
 Progressive Mfg. Co., 465 64th Ave., West Allis, Wis.
 Radio—See Elder Mfg. Co.
 Sly—See Hine-Watt Mfg. Co.
 Speedler—See Lydon Mfg. Co.
 Standard Auto Mfg. Co., 314 E. Genesee St., Syracuse, N. Y. "Aerodyna."
 Stanley—See Deppe Motors Corp.
 Stewart Machine Works, Alfred O., 310 E. Tenth St., Los Angeles, Cal.
 Superfactor—See Hard Mfg. Co.

Everything is listed under the NOUN or principal word



"COP-SPOTTER" REAR VIEW MIRROR

Reflects full view of entire width of the road, as seen through the rear curtain window, without detracting from your line of vision. You see ahead, to the side and behind by simply shifting your eyes. Made of the finest plate glass with ground edges, securely mounted in a handsome nickel-plated frame, easily attached to any style open or closed car.

Retails for \$4.00

Jobbers and Dealers—We have an attractive proposition for you

BERGER & COMPANY
208 W. 11th Street Los Angeles, Calif.
Makers of "BERLINE" Auto-Tow-Line



A Mirror By Day—A Light By Night

PARK-LITE REAR VIEW MIRROR

Used On Front Left Fender

This lamp is so designed that it may be used as a rear view mirror for day driving. At night when a car is parked, by lowering mirror to horizontal position a 2CP6V lamp is automatically lit. It is used in place of the regular lighting equipment on the car—thus saving 11 times the electrical energy that otherwise would be drawn out of the storage battery. Shows white light front and red rear light.

Write us today and we will tell you the full story of the Park-Lite, prices to the trade, etc.

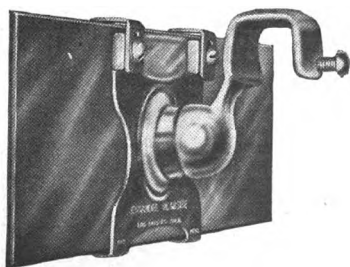
MIRROR PARK-LITE CORP.

208 WEST 17TH STREET

NEW YORK CITY

The **ESSANDEE**

**INTERIOR DRIVE
REARSITE MIRROR**



A real adjustable mirror. Can be instantly adjusted to any angle by slight pressure of the fingers. No nuts or screws to fool with. Made of ground bevel plate mirror. Mounted in finely nickeled bracket, \$5.00.

Dealer and Jobber inquiry invited.

ESSANDEE CORPORATION
330 W. 16th St., Los Angeles, Calif.



Here is the
reason

Distributors Wanted

For the Greatest Safety Device Ever
Invented for Fords

**MOSPICO
SAFETY
SPINDLES**

Make Your Ford Safe and Easy to Drive

They stop the wobbling of the front wheels. They make the wheels travel straight ahead over all sorts of roads. They stop the jerking of the steering wheel and enable you to drive long distances without tiring. They fit any Ford without any additional parts and are easily put on by the owner himself. These Spindles work fully as well with roller bearings as with ball bearings.

**Retail Price, \$9.75 a Pair. Your Profit
\$3.25. Write Us Today—NOW**

MOTOR SPINDLE CORPORATION
93 East Jefferson Avenue, DETROIT, MICH.

Please mention The Automobile Trade Directory

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES (Continued)

Thermo-Gasket Co., 57½ Dey St., New York, N. Y.
 V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.
 Vaghi Vaporizer Co., Depot Pl., Bethel, Conn.
 Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.
 Votalizer—See Flinham & Gilstrap Co.
 West—See Cumming-Forster Corp.
 Wilson Vaporizer Co., Roslyn, Pa.
 Wizard Mfg. Co., 551 E. Main St., Rochester, N. Y.
 York—See Automotive Mfg. Co.

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES, for Fords

(See also *Heaters, Mixtures; also Primers, engines*)
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Footair."
 American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Midget."
 (See page 77.)
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
 Automat-Co.—See Automotive Material Co.
 Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 919.)
 Automotive Products Co., 113 Market St., San Francisco, Cal.
 Ball & Ball—See Penberthy Injector Co.
 Boucher, Geo. S., Damascus, Va.
 Bull Dog—See Toledo Cable Co.
 Clemmer, G. H., West Alexandria, O.
 Daddy Vaporizer Co., 1317 Maumee Ave., Ft. Wayne, Ind.
 Ecometer Mfg. Co., Canfield St., Orange, N. J.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Jumbo."
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 Flinham & Gilstrap Co., 906 E. Fourth St., Topeka, Kans. "Votalizer."
 Footair—See American Automobile Accessories Co.
 Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.
 Hawkins Mfg. Co., Vineland, N. J.
 Ha Mae—See Hudson Motor Specialties Co.
 Hoosier Sub-Carburetor Co., 809 N. Illinois St., Indianapolis, Ind.
 Hub Auto Specialties Co., 190 Arlington Ave., Charlestown, Mass.
 Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Ha Mae."
 Jumbo—See Edelmann & Co.
 Midget—See American Automatic Devices Co.
 Nu-Wae—See Relax Co.
 Ogden Multiplier Co., Press Annex Bldg., Binghamton, N. Y.
 Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 561.)
 Pledger Accelerator Co., 70 State St., Boston, Mass.
 Relax Co., 2118 Monroe Ave., Norwood, O. "Nu Wae."
 Remington Mfg. Co., 1513 Walnut St., Philadelphia, Pa.
 Roper & Co., C. F., Hopedale, Mass.

SavOgas—See Vaporizer Utilities Sales Corp.
 Stewart Machine Works, Alfred C., 310 E. Tenth St., Los Angeles, Cal.
 Stransky Mfg. Co., Pukwana, S. Dak.
 Thermo-Gasket Co., 57½ Dey St., New York, N. Y.
 Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill.
 Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.
 Votalizer—See Flinham & Gilstrap Co.

MIXING VALVES—See Valves, Motor Boat Generator

MIXTURE HEATERS—See Heaters, Mixture

MOHAIR CLOTH—See Cloth, Mohair

MOHAIR TOP DRESSING—See Dressing, Mohair Top

MOISTENERS, Air or Mixture

(For feeding water into the intake manifold)

Aderholdt Mfg. Co., 1538 Broadway, Denver, Colo.
 American Automotive Corp., 1002 S. Michigan Ave., Chicago, Ill.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Workrite Moisteners.) (See page 243.)
 Atlas Auto Specialties Corp., 51 W. 66th St., New York, N. Y. "Ged."
 Auto Accessory & Engineering Co., Walker & Wight Sts., Detroit, Mich.
 Auto Specialty Sales Co., Foster Bldg., Denver, Colo. "Lumidor."
 Auto Water Pep Co., 2204 S. Michigan Ave., Chicago, Ill.
 Camel—See Weeks Mfg. Co.
 Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."
 Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo. "Dublservis."
 Comfort Motor Machine Co., 715 Galapage St., Denver, Colo.
 Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Dublservis—See Casey Asco Mfg. Co.
 Esta Co., 107 Massachusetts Ave., Boston, Mass.
 Fisher Co., 319-35 W. Ohio St., Chicago, Ill. "Marquette."
 Gas-E-Co.—See Gasoline Economy Co.
 Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-E-Co."
 Ged—See Atlas Auto Specialties Corp.
 Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Greico—See Grothe Electric Co.
 Grothe Electric Co., 823 Jefferson St., Burlington, Ia. "Greico."
 Halburn Co., 317 W. Pico St., Los Angeles, Cal. "Jensen."
 Hollowell Bros., 329 W. Pico St., Los Angeles, Cal.
 Humistat—See Tremont Products Co.
 Hydro-Carbon Preventive Co., 3029 Third Ave., New York, N. Y.
 Hydro-Juster—Motor Craft Shops.
 Hydrovaporizer—See Accessory Mfg. Sales Co.
 J-M Oxygenator Co., 1929 E. 40th St., Cleveland, O.

Everything is listed under the NOUN or principal word



THE most conclusive proof of quality in **WEMSCO** products is in the fact that manufacturers in the automobile field are using our products as standard equipment.

The manufacturer having auto part needs that require special attention will find it advantageous to send for details of our service.

WESTERN METAL SPECIALTY CO.
MILWAUKEE, WIS.

Sales Offices:
Central Service Corp.
1607 Merchants Bank Bldg., Indianapolis



A SUPER VULCANIZER

The "Western" Dreadnought Expandable Sectional Mold



Two cavities doing the work of eight—does a monster's work in a pigmy's space. A Master Plant for a Master Vulcanizer. Does more work—gives more profit. Don't fit tire to Mold—make Mold fit tire. This Expandable Automatic Mold does this—always ready with the right cavity for any size tire from 3" to 5½".

OUR AMAZING OFFER

You will marvel at our generous "trade-in" plan. Send list of your equipment, and we will make you an offer for it. Write at once for description of this "wonder" plant and our easy "trade-in" offer. Also have several used outfits of different makes for sale.

WESTERN RUBBER MOLD CO.

15 No. Summit St., Chicago

Factory Branches:

847 South Main Street, Akron, Ohio
3763 Woodward Avenue, Detroit, Mich.

PRESSURE PROOF PISTON RINGS

Service Station and Repairmen are finding in Pressure Proof Piston Rings one of the few dependable means of preventing Carbon and Smoke; Increasing Power and Saving Oil and Gas.

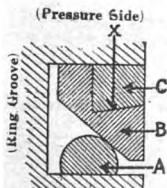
DISTRIBUTORS

For Maine, New Hampshire—Keating & Shaw, Inc., 110 Exchange St., Portland, Me.
For Lower Peninsula of Michigan—Chas. R. Manes, 3773 Jefferson Ave. E., Detroit, Mich.

CANADIAN FACTORY—Pressure Proof Rings, Ltd., Sun Life Bldg., Sherbrooke, Que.

For South Carolina—Gibbes Machinery Co., Wheat and Assembly Bldg., Columbia, S. C.

For New York City and Long Island—Frank E. Small, 110 West 34th St., near 6th Ave., New York City.



The expander A acts on the bevel of ring B, pressing it outward against cylinder wall, and upward against pressure side of ring groove. The small ring C is slightly beveled at the point X, to lock it into the main ring. This locks the two rings together.

The principle on which these rings operate (illustrated below) is mechanically correct—their ability to accomplish all that we claim for them is backed by years of performance unequalled by any other piston ring. "New Facts About Piston Rings" tells you why.

One Pressure Proof 3-Part or Two Pressure Proof 2-Part rings are a full piston equipment.



Pat. Mar. 2, 1915, Feb. 29, 1916



PRESSURE PROOF PISTON RING CO., 107 Mass. Ave., Boston, Mass.

Please mention The Automobile Trade Directory

MOISTENERS, Air or Mixture (Continued)

Jensen—See Halburn Co.
 K-L—See M-R Mfg. Co.
 Lake Sales Co., 1947 Broadway, New York, N. Y. "Lasco." (See page 807.)
 Lasco—See Lake Sales Co.
 Lumidor—See Auto Specialty Sales Co.
 M-R Mfg. Co., 2377 O. St., Lincoln, Neb. "K-L."
 Mantle & Co., 1907 Park Ave., New York, N. Y. "Pacco."
 Manufacturers Distributing Co., Seventh & Pine Sts., St. Louis, Mo. "Wegemann."
 Marquette—See Fisher Co.
 Motor Craft Shops, 183 Dartmouth St., Boston, Mass. "Hydro-Juster."
 No-Nox Co., 18 W. 34th St., New York, N. Y.
 Oxigin-isa—See Puritan Machine Works.
 Pacco—See Mantle & Co.
 Popp Mfg. Co., M. L. 343-45 33d Ave., Milwaukee, Wis.
 Puritan Machine Works, 1 Harsam St., Stoneham, Mass. "Oxigin-isa."
 Redee Mfg. Corp., Minneapolis, Minn.
 Reed & Co., P. C., 4525 N. Clark St., Chicago, Ill. "Wonder."
 Special Appliance Corp., Chicago, Ill. (See page 457.)
 Speedo, 405 Lexington Ave., New York, N. Y.
 Steel Products Co., Rice Lake, Wis. "Vapogas."
 Strasburg Mfg. Co., J. L., Albert Lea, Minn.
 Tankli Chemical Sales Co., 224 High St., Cleveland, O.
 Thomas-Armstrong Co., Geneva, N. Y.
 Till, William F., 150 Nassau St., New York, N. Y. "Vapor-Humidifier."
 Tremont Products Co., 216 High St., Boston, Mass. "Humistat."
 Vapogas—See Steel Products Co.
 Vapor-Humidifier—See Till, William F.
 Vapor Inspirator Co., 1225 W. Tenth St., Kansas City, Mo.
 Victor—See Campbell V. R.
 Water Gas Carburetor Co., 2207 Penn St., Kansas City, Mo.
 Weeks Mfg. Co., 421-37 National Ave., Milwaukee, Wis.
 Wegemann—See Manufacturers Distributing Co.
 Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.
 Wonder—See Reed & Co.
 Workrite Mfg. Co., 5602 Euclid Ave., Cleveland, O.

MOISTENERS, Air or Mixture, for Fords

(For feeding water into the intake manifold)

Adco—See American Automatic Devices Co.
 Aderholdt Mfg. Co., 1528 Broadway, Denver, Colo. "H-A."
 American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Adco." (See page 77.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Auto Specialty Sales Co., Foster Bldg., Denver, Colo. "Lumidor."
 Auto Water Pcp Co., 2204 S. Michigan Ave., Chicago, Ill.
 Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."
 De-Carbo—See Hastings Mfg. Co.

Friestedt Mfg. Co., 2294-28 W. Lake St., Chicago, Ill. "Hydronizer."
 Gas-B-Co.—See Gasoline Economy Co.
 Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-B-Co."
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 H-A—See Aderholdt Mfg. Co.
 H-O-B Mfg. Co., Michigan St. & Warman Ave., Indianapolis, Ind. "Ideal."
 Hastings Mfg. Co., 38 Mill St., Hastings, Mich. "De Carbo." (See page 573.)
 Hayes-Ederholdt Mfg. Co., Denver, Colo.
 Humistat—See Tremont Products Co.
 Hydronizer—See Friestedt Mfg. Co.
 Ideal—See H-O-B Mfg. Co.
 J-M Oxygenator Co., 1929 E. 40th St., Cleveland, O.
 Lumidor—See Auto Specialty Sales Co.
 Till, Wm. F., 150 Nassau St., New York, N. Y.
 Victor—See Campbell, V. R.

MOLDED INSULATION—See Composition, Insulating**MOLDS, COMPOSITION, HARD AND SOFT RUBBER—See Dies, Jigs, Tools and Fixtures****MOLDS, Lead**

(Molds for forming burning lead from scrap)

Ambu—See American Bureau of Engineering.
 American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 659.)
 Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. "H. B." (See page 201.)
 Camold—See Campbell Engineering Corp.
 Campbell Engineering Corp., 3803 Woodward Ave., Kansas City, Mo. "Camold."
 Colgan Co., J. W., 4 Alden Ct., Boston, Mass.
 H. B.—See Battery Equipment & Supply Co.
 Orum, S. R. M., 5143 Keyser St. (North Philadelphia), Philadelphia, Pa.
 R. & N.—See Randall & Noll.
 Randall & Noll, 317 S. 11th St., Lincoln, Neb. "R. & N."
 Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Metropolitan Distributor for "Ambu" Molds.) (See page 177.)
 Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 295.)

MOLDS and CORES, Tire Vulcanizing

Akron Rubber Mold & Machine Co., 917 Switzer Ave., Akron, O.
 Altenburg Tire Equipment Co., 218 E. Third St., Davenport, Ia.
 Bridgewater Machine Co., 31-37 Cherry St., Akron, O.
 Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.
 Clafin Engineering Co., Lancaster, O.
 DeMattia Bros., River Rd. & Prescott Ave., Garfield, N. J.
 Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.
 Fredd's Vulcanizing Plant, 425 Michigan St., Hancock, Mich.

Everything is listed under the NOUN or principal word

BATTERY SHOP

Equipment, Fittings and Books

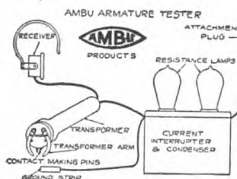
Electric Trouble Shooter



The greatest system ever devised for locating any trouble in the electrical mechanism or wiring of an auto. Whether in starting or lighting system, the AMBU Trouble Shooter will, in less than half an hour, locate it and tell you what it is—no more guessing. Pays for itself in a few weeks. Write today for details.

Cadmium Voltmeter and Leads

Makes it easy and simple to test each set of battery plates without taking down the battery. Specially calibrated positive and negative reading voltmeter and flexible leads with cadmium electrode complete, \$25.00. Voltmeter only, \$22.50. Leads only, \$5.25.



Armature Tester

One man tests any armature having a commutator—from 1 inch to any size; locates grounds, shorts, broken connections, crossed connections and open circuits. Operates on any circuit. A portable device with no sensitively adjusted parts. Works fast and sure. Necessary when testing generators or starters. Prices, complete, \$50.00.

Address Electrical Division

Battery Steamer

Softens compound for opening battery in 15 minutes, while men are busy elsewhere. No chance to damage battery box or connections by burning.



Plate Press

Increases the life of batteries by renewing plates. Presses the active materials of bulged negatives back into the grids. Made of wood with acid-resisting finish—nothing to corrode, \$32.50.

Plate Burning Rack

Holds the plates in position while the lead is melted in. Price of small rack, \$7.50. Large rack, \$12.50.

 **Battery Turntable**
Makes work on batteries fast and easy. Saves handling heavy batteries. Each, \$2.50.

 **Lead Molds**
Saves all your scrap lead. Molds it up into usable form for lead burning. Each, \$1.50. Pair, \$2.50.

 **Battery Carriers**
One man can carry two batteries. Easy to lift batteries from car. Each, \$1.50. Pair, \$2.50.
Address Appliance Division

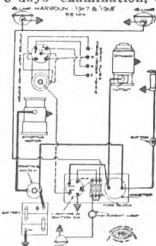
Auto Storage Battery— Its Care and Repair

The only authoritative book ever issued that tells all about the storage battery in simple language. Tells how to take down and reassemble batteries—how to locate and fix trouble—how to equip a battery shop—how a battery is made. A complete guide to the mechanic or boss—5 days' approval, \$5.00.



Ford Standard Electrical Equipment

A layman's book written by experts. Tells all about the new F.A. Starting and Lighting Systems now in all Ford cars. A necessity in every shop making Ford repairs. 150 pages—47 diagrams and illustrations. 5 days' examination, \$2.50.



Wiring Diagrams

The original authoritative diagrams, simple, convenient, easy to follow. A necessity in every shop. All cars: 700—1911 to 1919; 180—1917 to 1919 cars, in loose-leaf binder, \$3.50. All others ready for book, 25c each. Get just what you need, not a lot you never will want.

Address Publication Division

ORDER THROUGH YOUR JOBBER OR DIRECT

AMERICAN BUREAU OF ENGINEERING

Michigan Avenue at 16th Street, Chicago

Please mention The Automobile Trade Directory

MOLDS and CORES, Tire Vulcanizing (Continued)

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
 Kuhke Machine Co., 44-53 W. Exchange St., Akron, O.
 Legnard Co., A. B., Waukegan, Ill. "Vulcan."
 Miller, Chas. E., Anderson, Ind.
 Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."
 National Rubber Mold Co., 2763 Blake St., Denver, Colo.
 Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.
 Radium—See Milwaukee Auto Specialty Co.
 Redex—See Rubber Products & Machinery Co.
 Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."
 Smith One-Heat System, Cedar & Emerick Sts., South Bend, Ind.
 Sturgis Tire & Rubber Co., Oakland, Cal.
 Summit Mold & Machine Co., 1022-24 S. High St., Akron, O.
 Thropp's Sons Co., John E., Trenton, N. J.
 Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.
 Vulcan—See Legnard Co.
 Western Rubber Mold Co., 15 N. Summit St., Chicago, Ill. (See page 657.)
 Wilkinson-Beaver Mfg. Co., St. Louis, Mo.
 Williams Foundry & Machine Co., 100 Walnut St., Akron, O.
 Zwebell Bros. Co., 482 Milwaukee St., Milwaukee, Wis.

MOLYBDENUM, Ferro

Climax Molybdenum Co., 61 Broadway, New York, N. Y.
 Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

MONKEY WRENCHES—See Wrenches, Nut and Bolt**MONOGRAMS, DECALCOMANIA — See Transfers, Decalcomania****MONOGRAMS, Ornamental Metal**

Autograms—See Wood-Detroit Mfg. Co.
 Bernard Co., J., 422-30 E. 53d St., New York, N. Y.
 Colgan Co., J. W., 4 Alden Ct., Boston, Mass.
 Creutz Plating Co., Fifth & Elm Sts., Cincinnati, O.
 Crows Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill. (See page 719.)
 Dickson, James, 333 S. Clinton St., Chicago, Ill.
 Essex, C. F., 13428 97th Ave., Richmond Hill, N. J.
 Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.
 Handel Co., Louis, 133 Center St., New York, N. Y.
 Hicock Mfg. Co., 39 N. Water St., Rochester, N. Y.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Johnston Co., J. G., 79 Sudbury St., Boston, Mass.
 Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.
 Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
 Murdock Co., James W., 116 Opera Pl., Cincinnati, O.
 New York Stencil Works, 100 Nassau St., New York, N. Y.
 Salinan, John A., 110 Tremont St., Boston, Mass.
 Schwerdtle Stamp Co., 39-41 Cannon St., Bridgeport, Conn.
 Stafford Co., N., 67 Fulton St., New York, N. Y.
 Vego Hair Mfg. Co., Palatka, Fla.
 Walter & Sons, N. C., 8 Park Row, New York, N. Y.
 Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.
 Wood-Detroit Mfg. Co., Marquette Bldg., Detroit, Mich. "Autograms."

MONOGRAMS, RADIATOR—See Monograms, Ornamental**MORTISING MACHINES—See Machines, Wood Mortising****MOSS, Upholstery**

(For use instead of Hair; for Hair—See Hair, Upholstery; for Upholstery, Felt—See Felt Upholstery)

American Moss Products Corp., 200 Fifth Ave., New York, N. Y. "Amproco."
 Amproco—See American Moss Products Co.
 Babin, Luke B., Moss St., White Castle, La. "Babinmoss."
 Babinmoss—See Babin, Luke B.
 Crescent City Moss Ginnery Co., Lopez & Perdido Sts., New Orleans, La.
 Kohlmann Moss & Cotton Felt Mfg. Co., 411 Magazine St., New Orleans, La.
 Landers Bros. Co., Dept. A2, Toledo, O. (See page 1049.)
 Schwing Co., R. I., Plaquemine, La.
 Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
 Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)
 Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

MOTION RECORDERS—See Recorders, Vehicle**MOTOR ATTACHMENTS—See Wheels, Motor****MOTOR BOATS—See Section I****MOTOR COMMUTATORS—See Commutators, Electric Motor****MOTOR CONTROLLERS—See Controllers, Electric Motor****MOTOR DECARBONIZING MACHINES—See Machines, Engine Decarbonizing****MOTOR DRIVEN SAW BENCHES—See Benches, Motor Driven Saw**

Everything is listed under the NOUN or principal word

MOTOR GENERATORS—See *Dynamos, and Motor Generators*

MOTOR HEAT SEALS—See *Seals, Motor Heat*

MOTOR HOODS—See *Hoods, Engine*

MOTOR RACKS—See *Racks, Engine*

MOTOR REPAIR STANDS—See *Stands, Engine Repair*

MOTOR TESTING INSTRUMENTS—See *Instruments, Engine Testing*

MOTOR TRUCKS—See *Section I*

MOTOR WHEELS—See *Wheels, Motor*

MOTORCYCLES—See *Section I*

MOTORISTS' AXES—See *Axes, Motorists*

MOTORISTS' HATCHETS—See *Axes, Motorists*

MOTORS, AIRCRAFT GASOLINE—See *Engines, Aircraft Gasoline*

MOTORS, DETACHABLE—See *Engines, Motor Boat Outboard*

MOTORS, Electric Automobile

Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.

General Electric Co., Schenectady, N. Y. (See page 779.)

Lincoln Electric Co., 88th St. & Kelley Ave., N. E. Cleveland, O.

Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 926 and 927.)

MOTORS, GASOLINE AUTOMOBILE—See *Engines, Automobile Gasoline*

MOTORS, KEROSENE—See *Engines, Motor Boat, Kerosene*

MOTORS, MOTOR BOAT GASOLINE—See *Engines, Motor Boat Gasoline*

MOTORS, MOTOR BOAT OUTBOARD OR DETACHABLE—See *Engines, Motor Boat Outboard or Detachable*

MOTORS, MOTORCYCLE GASOLINE—See *Engines, Motorcycle Gasoline*

MOTORS, STEAM—See *Engines, Steam*

MOULDING, BODY—See *Moulding, Brass; also Moulding, Steel*

MOULDING, BRASS

American Brass Co., Waterbury, Conn. (See page 165.)

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn.

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

Douglas & Lomason Co., 5838 Lincoln Ave., Detroit, Mich.

English & Mersick Co., New Haven, Conn. (See page 571.)

Jonah & George, Little's Ct., Merrimac, Mass.

Manhattan Brass Co., 328 E. 28th St., New York, N. Y.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Morton Mfg. Co., 5135-39 W. Lake St., Chicago, Ill. (See page 1009.)

Randolph-Cloves Co., 384 Bank St., Waterbury, Conn.

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Smith Wire & Iron Works, F. P., 2340-48 Clybourne Ave., Chicago, Ill.

Spiro Mfg. Co., C., 68-73 E. 131st St., New York, N. Y. "Uniq."

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Uniq.—See *Spiro Mfg. Co.*

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

MOULDING, Flexible Leather

Anchor—See *Indianapolis Saddlery Co.*

Carter Co., George R., Connorsville, Ind.

Indianapolis Saddlery Co., 237 S. Meridian St., Indianapolis, Ind. "Anchor."

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

MOULDING, LEATHER—See *Moulding, Flexible Leather*

MOULDING, Running Board

(See also *Moulding, Brass; also Moulding, Steel*)

Allite—See *Zenite Metal Co.*

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.

Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

English & Mersick Co., New Haven, Conn. (See page 571.)

Erdle Perforating Co., 171 York St., Rochester, N. Y. (See page 647.)

Higgins Mfg. Co., Newport, Ky.

Kawneer Mfg. Co., 931 Front St., Niles, Mich.

Merts Mfg. Co., John, Water & Decatur Sts., Sandusky, O.

Morton Mfg. Co., 5135-39 W. Lake St., Chicago, Ill. (See page 1009.)

Everything is listed under the NOUN or principal word

MOULDING, Running Board (Continued)

- Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Uniq—See Spiro Mfg. Co.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. "Alite." (See page 901.)

MOULDING, Steel

- Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 Empire Art Metal Co., College Point, N. Y.
 Kawneer Mfg. Co., 931 Front St., Niles, Mich.
 Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 1009.)
 Perfection Metal Products Co., College Point, N. Y.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Uniq—See Spiro Mfg. Co.

MOUNTING ATTACHMENTS, MAGNETO, for Fords—See Attachments, Magneto Mounting**MOVEMENT RECORDERS—See Recorders, Vehicle****MUD DEFLECTORS, for Fords—See Pans, Radiator Splash****MUD GUARD ANTI-RATTLERS, for Fords—See Braces, Mud Guard****MUD GUARD BRACES, for Fords—See Braces, Mud Guard****MUD GUARD CLAMPS, for Fords—See Braces, Mud Guard****MUD GUARD SILENCERS, for Fords—See Braces, Mud Guard****MUD GUARDS—See Fenders or Mud Guards****MUD HOOKS—See Chains or Grips, Non-Skid****MUFFLER CUT-OUT PEDALS—See Pedals, Horn****MUFFLER CUT-OUTS—See Valves, Muffler Cut-out****MUFFLER PAINTS—See Paints, Exhaust Pipe****MUFFLER SHELLS—See Shells, Muffler for Fords****MUFFLERS, Exhaust**

- Anti-Explo—See Gemco Mfg. Co.
 Buffalo Pressed Steel Co., Buffalo, N. Y.

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

Ejector—See Dunkirk Corp.

El Dorado—See Jones Auto Muffler Co.

Emco Mfg. Co., Binghamton, N. Y. "Taber," "Solo." (See page 521.)

Ever Clean—See Miller & Co.

Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.

G. P. & F.—See Gauder, Paeschke & Frey Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Anti-Explo." (See pages 172 and 173.)

Gauder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. "G. P. & F.," "Maxim." (See page 935.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., Detroit, Mich.

Hersh & Bro., 657 Mill St., Allentown, Pa.

International Steel Products Co., Hartford, Wis. "Uvee."

Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 125.)

Maxim—See Gauder, Paeschke & Frey Co.

Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.

Miller & Co., Spring Valley, Ill. "Ever Clean."

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Multijector—See Reid, David.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Oldberg Mfg. Co., Detroit, Mich. (See page 663.)

Powell Muffler Co., Utica, N. Y. (See page 665.)

Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."

Solo—See Emco Mfg. Co.

Taber—See Emco Mfg. Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 289.)

Uvee—See International Steel Products Co.

Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.

Yankee Co., 69 Genesee St., Utica, N. Y.

York Corrugating Co., York, Pa. (See page 931.)

MUFFLERS, Exhaust, for Fords

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Spencer" Mufflers.) (See page 243.)

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco."

Bupresco—See Buffalo Pressed Steel Co.

Canton Co., A. S., 174 Franklin St., New York, N. Y.

Cuthbert-Freidberg Mfg. Co., New Brunswick, N. J.

Dunham Co., Thos., Aurora, Ill. (See page 163.)

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."

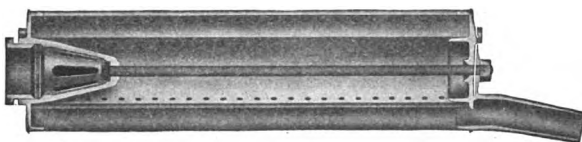
Ejector—See Dunkirk Corp.

El Dorado—See Jones Auto Muffler Co.

Emco Mfg. Co., Binghamton, N. Y. "Taber." (See page 521.)

Everything is listed under the NOUN or principal word

OLDBERG MUFFLERS



Interior Construction of Models "C", "D", "E", and "F"



Model "C"

Model "C"

Outside diameter $4\frac{3}{4}$ ". Length optional to 24". Tube sizes up to 2" O.D. Supplied with or without cut-out.

Model "D"

Outside diameter $5\frac{1}{4}$ ". Length optional to 28". Tube sizes up to $2\frac{1}{2}$ " O.D. Supplied with or without cut-out.



Model "D"



Model "E"

Model "E"

Outside diameter $6\frac{3}{4}$ ". Length optional to 30". Tube sizes to $2\frac{7}{8}$ " O.D. Supplied with or without cut-out.

Model "F"

Outside diameter 4". Length optional up to 24". Tube sizes up to 2" O.D. Not supplied with cut-out.



Model "F"

OLDBERG SPECIAL SERVICE

We can supply from stock any of our standard Oldberg models illustrated herewith, and can make up, to your order, any special exterior construction or fitting which may be necessary to mount our muffler in your chassis. The standard constructions shown completely cover all the sizes which will be required by either pleasure or commercial motor vehicle manufacturers. Free samples to manufacturers upon receipt of the size of motor and exhaust tube and whether or not cut-out is required. Write for specifications and quotations.

OLDBERG MANUFACTURING COMPANY
DETROIT, :: :: :: MICHIGAN

Please mention The Automobile Trade Directory

MUFFLERS, Exhaust, for Fords (Continued)

Ever Clean—See Miller & Co.
 Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 935.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.
 Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
 Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D. Cincinnati, O. "Lawco." (See page 125.)
 Maxim—See Geuder, Paeschke & Frey Co.
 Miller & Co., Spring Valley, Ill. "Ever Clean."
 Multijector—See Reid, David.
 Oldberg Mfg. Co., Detroit, Mich. (See page 663.)
 Powell Muffler Co., Utica, N. Y. (See page 665.)
 Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Spencer Metal Products Co., Spencer, O. (See page 508.)
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Sterling—See Republic Auto Parts Co.
 Taber—See Emco Mfg. Co.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 289.)
 Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.
 Yankee Co., 69 Genesee St., Utica, N. Y.
MUFFLERS, EXHAUST MOTOR BOAT—
 See Mufflers, Motor Boat Exhaust
MUFFLERS, EXHAUST MOTORCYCLE—
 See Mufflers, Motorcycle Exhaust
MUFFLERS, EXHAUST TRACTOR—
 See Mufflers, Tractor Exhaust

MUFFLERS, Motor Boat Exhaust

(See also Buses, Underwater Exhaust)

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco."
 Bupresco—See Buffalo Pressed Steel Co.
 Central Mfg. Co., 153 Liverpool St., Boston, Mass. "Thermex."
 Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
 Eisenbrandt, F. B., Light St., Baltimore, Md.
 Ejector—See Dunkirk Corp.
 Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.
 Multijector—See Reid, David.
 Oldberg Mfg. Co., Detroit, Mich. (See page 663.)
 Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
 Thermex—See Central Mfg. Co.
 Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.

MUFFLERS, Motorcycle Exhaust

Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
 Ejector—See Dunkirk Corp.
 Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
 Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 935.)
 Maxim—See Geuder, Paeschke & Frey Co.
 Multijector—See Reid, David.
 Oldberg Mfg. Co., Detroit, Mich. (See page 663.)
 Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
 Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.

MUFFLERS, Throat

(See also Clothing, Motorists)

Bradley Knitting Co., Delevan, Wis.

MUFFLERS, Tractor Exhaust

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco."
 Bupresco—See Buffalo Pressed Steel Co.
 Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
 Ejector—See Dunkirk Corp.
 Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 935.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.
 Lawson Co., F. H., Dept. D. Cincinnati, O. "Lawco." (See page 125.)
 Maxim—See Geuder, Paeschke & Frey Co.
 Multijector—See Reid, David.
 Oldberg Mfg. Co., Detroit, Mich. (See page 663.)
 Powell Muffler Co., Utica, N. Y. (See page 665.)
 Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
 Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.

MULTIPLE SPINDLE DRILLS—See Drills, Multiple Spindle

NAILS, UPHOLSTERY—See Tacks, Upholstery

NAME PLATES—See Plates, Name

NATURAL LEATHER—See Leather, Natural

NEEDLE VALVES—See Valves, Needle

NICKEL STEEL—See Steel, Nickel

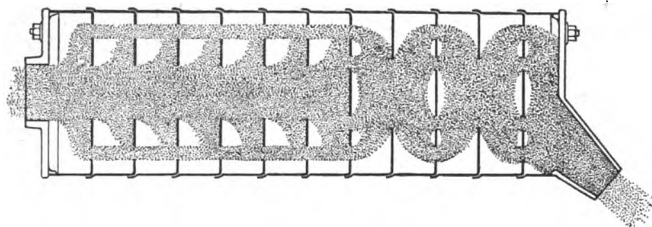
NIPPERS—See Pliers, Combination

NIPPLES, PIPE—See Fittings, Pipe

NIPPLES, PUMP—See Connections, Tire Pump

NON-DEMOUNTABLE WIRE WHEELS—See Wheels, Non-Demountable Wire

Everything is listed under the NOUN or principal word



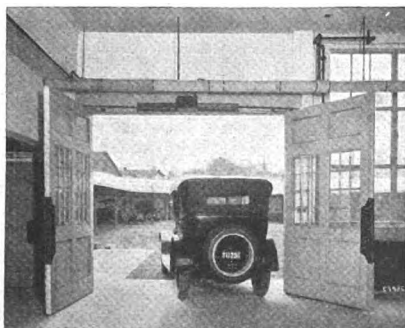
POWELL MUFFLERS

WHY are they used by over 40 of the leading automobile and truck companies? They will not blow up, leak or rattle; no small holes to plug with carbon oil; easy to take apart and clean. Malleable iron heads, steel sections through the center. All sizes in stock.

POWELL MUFFLER COMPANY
UTICA, NEW YORK

CASEY HUDSON

CARTER-CRANE PATENTS
Door and Gate Control



Used by some of the largest Garages and Service Stations in the Country

Easily and simply installed on any type door. Single-button low tension control stations at convenient locations take care of your door problems. We also manufacture high grade automobile accessories.

Write for catalog.

Casey-Hudson Company

361 E. Ohio St., Chicago, Ill.

The First



Brings Life to the Vanished Tire!

FIRST NATIONAL RELINERS are the result of several years of scientific effort to produce a Tire reinforcement that would not only prevent punctures and blow-outs, but actually double the ordinary life of any Tire.

That we have succeeded in our effort is evidenced by the constantly increasing demand for FIRST NATIONAL RELINERS.

Tire dealers and vulcanizers everywhere are recommending them to their customers. Why?

BECAUSE they are the last word in TIRE ECONOMY.

Write today for our dealers' price list.

We absorb all freight charges to any point.

Manufacturers of

National Reliners, Skived Shoes, Inside Blow-out Patches, Inner Tubes, Spark Plugs.

First National Tire & Reliner Co.

55 Compau St.

GRAND RAPIDS, MICH.

Please mention The Automobile Trade Directory

NON-EXPLOSIVE TANK FILLING TUBES
—See Tubes, Non-Explosive Tank Filling

NON-FREEZING COMPOUNDS—See Compounds, Anti-Freezing

NON-SKIDS, TIRE—See Bands, Non-Skid;
also Chains or Grips; also Treads, Tire;
also Boxes, Sand

NOZZLES, Air Upholstery Cleaning

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.)
(See pages 688 and 689.)

NUMBER HOLDERS—See Holders, License

NUMBERS or HANGERS, License

(For License Holders—See Holders, License)

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.

Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.

Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y.

Sachs-Lawler Co., 1543 Lorimer St., Denver, Colo.

Shonk Works, Maywood, Ill.

Stafford Co., N., 67 Fulton St., New York, N. Y.

Stillman, A. P., 353 Jay St., Brooklyn, N. Y.
Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.

NUMBERS, STEEL—See Stamps, Steel

NUT WRENCHES—See Wrenches, Nut and Bolt

NUTS, CASE HARDENED—See Nuts, Finished

NUTS, Castellated

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.

Atlas Bolt & Screw Co., Cleveland, O.
(See page 831.)

Automatic Screw Machine Products Co., 418 W. Grand Ave., Chicago, Ill.

Barklelew Metal Products Co., Richard & Bowen Sts., Dayton, O.
(See page 667.)

Brightman Mfg. Co., Marion Rd., Columbus, O.

Brightman Nut & Mfg. Co., Sandusky, O.
(See page 669.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.
(See pages 551 and 827.)

Cincinnati Screw Co., Twilight, O.
(See page 945.)

Clark Bros. Bolt Co., Milldale, Conn.

Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn.

D. W. F. Engineering Co., 69 Sprague St., Providence, R. I.

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y.
(See page 669.)

Erie Specialty Co., Erie, Pa.

Federal Nut, Bolt & Machine Co., 1639 Colamer Ave., Cleveland, O.

Federal Screw Works, 4725 Ellery St., Detroit, Mich.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Graham Nut Co., 1817-19 W. Carson St., Pittsburgh, Pa.

Hagen Metal Products Co., St. Louis, Mo.

Hartford Machine Screw Co., Hartford, Conn. (See page 829.)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Hyklas—See Parts Service Co.

Milton Mfg. Co., Milton, Pa.

National Aetna Co., Cleveland, O.
(See page 667.)

National Bolt & Nut Co., 62nd St. & A. V. R. R.; Pittsburgh, Pa.

National Lock Co., Rockford, Ill.

National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.

P. & C. Nut Co., 519 Water St., Jackson, Mich.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas."
(See page 147.)

Phoenix Mfg. Co., Loraine and Grand River Aves., Detroit, Mich.
(See page 147.)

Rhode Island Tool Co., Providence, R. I.

Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Sandusky Nut Co., 122 Laurence St., Sandusky, O.

Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill.

Upton Nut Co., Unionville, Conn.

U. S. Automatic Co., Amherst, O.

Western Automatic Machine Screw Co., Elyria, O.

Western Screw-Products Co., St. Louis, Mo. (See page 605.)

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, Finished and Case Hardened

Atlas Bolt & Screw Co., Cleveland, O.
(See page 831.)

Barklelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 667.)

Brightman Mfg. Co., Marion Rd., Columbus, O.

Brightman Nut & Mfg. Co., Sandusky, O.
(See page 669.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.

(See pages 551 and 827.)

Cincinnati Screw Co., Twilight, O.
(See page 945.)

Clark Bros. Bolt Co., Milldale, Conn.

Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn.

Columbus Bolt Works Co., Columbus, O.
(See page 147.)

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Everything is listed under the NOUN or principal word

STANDARD S. A. E. & U. S. SCREWS and NUTS CARRIED IN STOCK

Specials Made to Specifications

Special Milled Screw Machine Work made from Iron, Steel and Brass Bars to samples or blueprints. Full equipment for hardened and ground work. Capacities up to 4 in. diameter.

The National Acme Company

CLEVELAND, OHIO

MONTREAL, P. Q.

Branch Offices: New York, Chicago, Boston, Detroit, Buffalo.

Warehouses: New York, 77 White St.; Chicago, 559 W. Washington Blvd. Southern Representatives: V. A. Moore & Co., Atlanta, Healy Bldg. Pacific Coast Representatives: Hughson & Merton, San Francisco, Los Angeles, Portland, and Seattle.

A BUSINESS BUILT ON A MOTTO

He profits most who serves best



Capacity, $\frac{1}{8}$ to $\frac{3}{4}$

Plain Nuts, Cap Set-Screws,
Studs, Ford Connecting-Rod
Bolts and Nuts.

Specialties of all kinds turned from
Bar Stock

The Barkelew Metal Products Co.

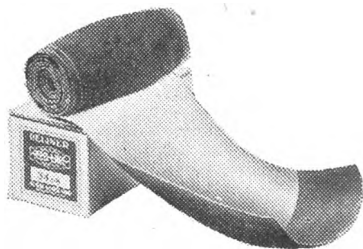
Richard and Bowen Streets
Dayton, Ohio

Michigan Representative

A. J. DIEBEL

976 Woodward Ave. Detroit, Mich.
Let us study your blue prints and
submit figures

RED LINE PRODUCTS



Red Line Reliner

ALSO PRODUCING

Auto Polish	Radiator Cement
Mohair Top Dye	Black Enamel
Leather Renewer	Spring Oil
Fossillac	Valve Grinding Compound
Spark Plugs	
Transmission Sets for Fords	
Sedan Tops for Fords	

Special Brand Goods to Order

RED LINE INC.

GRAND RAPIDS

MICHIGAN

Please mention The Automobile Trade Directory

NUTS, Finished and Case Hardened (Continued)

Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (See page 669.)
Erie Specialty Co., Erie, Pa.
Falls Rivet Co., Kent, O.
Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
Garland Mfg. Co. (W. Pittsburgh.), Pittsburgh, Pa.
Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Hyklas—See Parts Service Co.
Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
Milton Mfg. Co., Milton, Pa.
National Acme Co., Cleveland, O. (See page 667.)
National Bolt & Nut Co., 62d St. & A. V. R. R., Pittsburgh, Pa.
National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 147.)
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Perfection—See Foster Bolt & Nut Mfg. Co.
Phoenix Mfg. Co., Loraine and Grand River Aves., Detroit, Mich. (See page 147.)
Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Sandusky Nut Co., 122 Laurence St., Sandusky, O.
Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill.
Upson-Nort Co., Unionville, Conn.
U. S. Automatic Co., Amherst, O.
Western Automatic Machine Screw Co., Elyria, O.
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, HARDENED—See Nuts, Finished

NUTS and WASHERS, Lock

Absolute—See American Lock-Nut Co.
American Lock-Nut Co., 123 E. Michigan Ave., Chicago, Ill. "Absolute."
American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburgh, Pa.
Andrix Lock-Nut Co., Locust & Michigan Sts., Adrian, Mich.
Arghis & Co., E. J., 74 Wall St., New York, N. Y. "Evans."
Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.

Cincinnati Screw Co., Twightwee, O. (See page 845.)
Cincinnati Screw & Tap Co., 2442 Beekman St., Cincinnati, O.
Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn.
Drake Lock Nut Co., 7413 Stanton Ave., Cleveland, O.
Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments only.) (See page 669.)
Evans—See Arghis & Co.
Gib—See Columbia Nut & Bolt Co.
Hidalgo Steel Co., 253 Broadway, New York, N. Y. "Shekleton."
Hipower—See National Lock Washer Co.
Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass. (Sole Distributors for O. K. Nut Lock Co., Providence, R. I.)
Hold-Tite—See Nutlock Corp.
Holdfast Nut & Bolt Co., 134 S. La Salle St., Chicago, Ill.
Industrial Mfg. Corp., 184 Heard St., Worcester, Mass.
Keystone—See Positive Lock Washer Co.
Mansfield Lock Washer Co., 230 N. Adams St., Mansfield, O.
National Lock Washer Co., 40 Harmon St., Newark, N. J. "Hipower."
National Umbrella Frame Co., 30th & Thompson Sts., Philadelphia, Pa. "Never-Slip." (See page 1043.)
Never Slip—See National Umbrella Frame Co.
Nutlock Corp., 166 Montague St., Brooklyn, N. Y. "Hold-Tite."
O. K. Nut Lock Co.—See Hobbs Mfg. Co.
Palnut Corp., 1400 Niagara St., Buffalo, N. Y.
Positive Lock Washer Co., Newark, N. J. "Keystone." (See page 1045.)
Quadrige Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill.
Reliance Mfg. Co., Massillon, O. (See page 1045.)
Safety Nut & Bolt Co., Cleveland, O. "Stevenson."
Saller & Melvin Mfg. Co., Massillon, O.
Schum Bros., 1 Madison Ave., New York, N. Y.
Selflock Nut & Bolt Co. (E. Syracuse), Syracuse, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Shekleton—See Hidalgo Steel Co.
Smith & Hemenway, 130 Colt St., Irvington, N. J.
Stevenson—See Safety Nut & Bolt Co.
Torsion Nut-Lock & Washer Co., 11 Central St., Boston, Mass.
Wire Goods Co., 23 Union St., Worcester, Mass.

NUTS, SPECIAL AIRCRAFT—See Bolts and Nuts, Special Aircraft

NUTS, Thumb or Wing

Atlas Bolt & Screw Co., Cleveland, O. (See page 831.)
Chicago Nut Co., 2513-29 W. 20th St., Chicago, Ill.
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 551 and 827.)
Clark Bros. Bolt Co., Milldale, Conn.
Cleveland Wrought Products Co., W. 58th St., South of Denison Ave., Cleveland, O. (See page 825.)

Everything is listed under the NOUN or principal word

Assorted Necessities of the Better Kind At Lower Prices



Put up with "Fool-proof" Labels in screw top containers.

Let us submit samples and prices for your approval.



LOCK WASHERS—COTTER PINS—TAPER PINS

U. S. S. CAP SCREWS—U. S. S. SEMI-FIN. NUTS—U. S. S. SLOTTED NUTS

S. A. E. CASTELLATED NUTS—S. A. E. CAP SCREWS—S. A. E. SEMI-FIN. NUTS

EMPIRE CITY SCREW PRODUCTS CO., 12 W. 62d Street, New York City



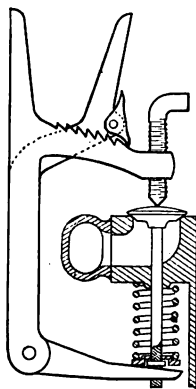
HEADQUARTERS FOR

Milled Steel Bar Nuts

U.S., A. L. A. M. or S. A. E. Standard. Finished, Semi-Finished and Castellated Nuts. Special Nuts of all kinds.

**BRIGHTMAN NUT AND MANUFACTURING COMPANY
SANDUSKY, OHIO**

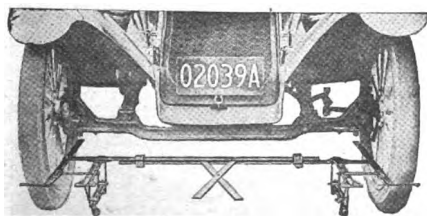
Manufacturers of Cold Drawn Hex Screw Stock
Detroit Office: 976 Woodward Ave., A. J. Diebel, Rep.
Cincinnati Office: 500 Bell Block, A. T. Fisher, Rep.
Chicago, Ill., The Bailey-Drake Co., Rep.
New York: 100 Church St., Steyn-Pease Co.



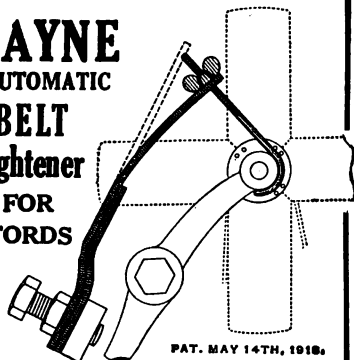
The
**DUBY Valve
Lifter**
AND THE
**DUBY Wheel
Gage**

**SPEAK FOR
THEMSELVES**

J. F. DUBY
11 RIVER STREET
Mattapan, Mass.



BAYNE
AUTOMATIC
BELT
Tightener
FOR
FORDS



PAT. MAY 14TH, 1910.

"IT TAKES UP THE SLACK"

**"BB" LICENSE NUMBER
HOLDER FOR FORDS**
COMPLIES WITH THE LAW



NOTE the NOTCH

PAT.-1-30-17

Bayne Manufacturing Co., Bushnell, Ill.

Please mention The Automobile Trade Directory

NUTS, Thumb or Wing (Continued)

Columbus Bolt Works Co., Columbus, O.
(See page 147.)

Haskell Mfg. Co., Wm. H., 24 Commerce St.,
Pawtucket, R. I.

Keeler Brass Co., 251-71 Godfrey Ave., Grand
Rapids, Mich.

Peninsular Milled Screw Co., 6910 E. La-
fayette St., Detroit, Mich.

St. Louis Screw Co., Clarence & Bulwer Aves.,
St. Louis, Mo.

Upson Nut Co., Unionville, Conn.

Western Automatic Machine Screw Co.,
Elyria, O.

Worcester Machine Screw Co., 26 Haviland
St., Worcester, Mass.

NUTS, WING—See Nuts, Thumb or Wing

ODOMETERS OR DISTANCE METERS—
See Meters, Distance Recording

OIL ALARMS—See Alarms, Low Oil

OIL CAN HOLDERS—See Holders, Oil
Can; also Holders or Tipplers, Oil Can
and Barrel

OIL CAN TIPPERS—See Holders or Tip-
pers, Oil Can and Barrel

OIL CANS—See Cans, Oiling

OIL, Castor

A-A—See Baker Castor Oil Co.

Baker Castor Oil Co., 120 Broadway, New
York, N. Y. "A-A."

OIL CLARIFIERS—See Separators, Oil

OIL COCK WRENCHES FOR FORDS—See
Wrenches, Oil Cock

OIL CUPS—See Cups, Oil and Grease

OIL DEFLECTORS FOR FORDS—See De-
flectors, Oil

OIL FILLER PUMPS—See Tanks and Sys-
tems, Oil

OIL FILTERS—See Filters, Oil

OIL FUNNELS—See Funnels and Meas-
ures, Metal

OIL GAGES—See Gages, Oil Pressure

OIL GAGES FOR FORDS—See Gages, Oil

OIL GUARDS FOR FORDS—See Guards,
Oil

OIL GUNS—See Guns, Oil

OIL HOLE COVERS—See Covers, Oil Hole

OIL LAMPS—See Lamps, Oil

OIL MEASURES—See Funnels and Meas-
ures, Metal

OIL METERS—See Meters, Gasoline or Oil

OIL PRESSURE GAGES—See Gage Oils,
Pressure

OIL PUMPS—See Lubricators

OIL PURIFIERS—See Purifiers, Oil

OIL RETAINING RINGS—See Washers, Felt

OIL SEPARATORS—See Separators, Oil

**OIL TEMPERATURE INDICATING ME-
TERS**—See Meters, Oil Temperature
Indicating

OIL TEMPERING—See Treating Heat

OIL TEST COCKS FOR FORDS—See
Gages, Oil

OIL TUBE VALVES FOR FORDS—See
Valves, Oil Tube

OILERS, CUP—See Cups, Oil and Grease

OILERS, ENGINE—See Lubricators

OILERS, SPEEDOMETER SHAFT—See
Lubricators, Speedometer Shaft

OILERS, SPRING LEAF—See Cups, Spring
Leaf Lubricating; also Strips, Spring Leaf
Lubricating; also Tools, Spring Leaf Sep-
arating

OILERS, SQUIRT—See Cans, Oiling

OILING BOXES—See Cups, Spring Leaf
Lubricating

OILS, CUTTING—See Lubricants, Cutting

OILS, CYLINDER—See Oils, Lubricating

OILS, GEAR—See Oils, Lubricating; also
Greases

OILS, Lubricating

A-B-C—See Layton Park Oil & Soap Co.

Acheson Products—See Cassidy Co.

Advance—See Lynch, Alonzo K.

Aerul—See Swan & Finch Co.

Albany—See Cook's Sons.

Alexander & Co., H. T., 17 Battery Pl., New
York, N. Y. "Grand Prix."

Allegheny—See Roseberg Oil Co.

Amale—See Sonneborn Sons.

American Oil Co., American Bldg., Baltimore,
Md. "Eze-Lube" "Amoco."

American Oil Corp., S. Water St., Jackson,
Mich. "Jaxonoil."

Amoco—See American Oil Co.

Anticarbo—See Cincinnati Oil Works Co.

Arco Co., Euclid Ave. & E. 68th St., Cleve-
land, O.

Aristo—See Union Oil Co. of California.

Atlas—See Swan & Finch Co.

Everything is listed under the NOUN or principal word

POWEROL

MOTOR OIL "It MAKES Your Motor
Deliver Maximum Results"

THE POWER-OIL CO., Ltd.

ST. LOUIS

CHICAGO

KANSAS CITY

MOTOR LUBRICANTS

WAVERLY "All Pennsylvania"



"Light"—"Waverly Special" (Medium)
"Heavy"—"Medium Heavy"—"Extra Heavy"

Cup Greases—Gear Lubricants
Hard and Soft Potash Oil Soaps

Write for our new "Waverly Sample Book"

WAVERLY OIL WORKS CO.

Established 1880

PITTSBURGH, U. S. A.

WOLVERINE TUBE Co.

1411-1451 CENTRAL AVE.

DETROIT, MICH.

Manufacturers of

BRASS AND COPPER TUBING

IN COILS OR STRAIGHT LENGTHS

We also specialize in bent, tapered and flanged brass and copper tubes such as, cable tubes, water outlets and inlets, intake manifolds, gasoline and oil lines.

BRASS AND BRONZE BUSHINGS



ilzum



Used by The Leading Race Drivers

LUBRICATES LONGER and BETTER and LEAVES LESS CARBON THAN
OTHER OILS

Agents Wanted in Unoccupied Territory.

Write for Attractive Proposition.

THE WHITE & BAGLEY CO.

Worcester, Mass.

Please mention The Automobile Trade Directory

OILS, LUBRICATING (Continued)

- Aurora—See Pigot-Sayre Co.
 Autlubo—See Moore Oil Refining Co.
 Auto Oil Co., 172 S. Water St., Jackson, Mich.
 Autocrat—See Bock & Snelling Co.
 Autoline—See Robinson & Son Co.
 Balkan—See Jones & Bro.
 Balso Oil Co., 238 N. Erie St., Toledo, O.
 Banner—See Clarkson & Ford Co.
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Bayerson Oil Works—See Bock & Snelling Co.
 Belden & Co., A. G., 29 Burling Slip, New York, N. Y. "Valvone," "Pyconoleum."
 Berry's Sons, Jas. L., 11 Broadway, New York, N. Y.
 Bliven & Carington, 29 Moore St., New York, N. Y. "Champion."
 Blue Ribbon—See Sawyer Oil Co.
 Bock & Co., Harry E., Book Bldg., Detroit, Mich. (Sole Distributors for Bayerson Oil Works, Erie, Pa. "Autocrat," "Parolene," "Ruby.")
 Borne, Scrymser Co., 80 South St., New York, N. Y. "Colonial," "Globe."
 Bull Dog—See Climax Western Oil Co.
 Calypso—See Swan & Finch Co.
 Carbo Oil Co., Cleveland, O.
 Carolene—See Valley Oil Co.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Acheson Products, Niagara Falls, N. Y. "Oil-dag.")
 Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Anticarb."
 Clarkson & Ford Co., 55 Water St., New York, N. Y. "Banner."
 Climax Lubricating Co., 218 N. 13th St., Philadelphia, Pa.
 Climax Western Oil Co., 2324 Tenth Ave., S., Minneapolis, Minn. "Bull dog."
 Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Reliable."
 Colonial—See Borne, Scrymser Co.
 Colorado Lubricating Co., 1723 Wasee St., Denver, Colo. "Lubrolene."
 Columbia Refining Co., 90 West St., New York, N. Y.
 Conn-O-Co—See Connecticut Oil Co.
 Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn. "Conn-O-Co."
 Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."
 Crane & Co., L. M., 91 Oliver St., Boston, Mass. "Eureka."
 Crawford Co., Wm. J., 9 Wood St., Pittsburgh, Pa.
 Crew Levick Co., 111 N. Broad St., Philadelphia, Pa. "Perfection."
 Crown—See Swan & Finch Co.
 Crown—See Great Western Oil Co.
 Crudeline—See Reighard Oil Co.
 Crum Mfg. Co., 120 N. Main St., Ottawa, Kans. "No-Squeak."
 Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.
 Crystalline—See Kentucky Consumers Oil Co.
 Currola—See Curry Bros. Oil Co.
 Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."
 Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.
 Deffance—See Waverly Oil Works Co.
 Drake Oil Co., 99 E. Spring St., Titusville, Pa. "Speed-Oil."
 Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.
 Duplex—See Enterprise Oil Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleline."
 Eagleline—See Eagle Oil & Supply Co.
 Econo-Lub—See Middle States Oil Co.
 Economy—See Street & Co.
 Emco—See Emery Mfg. Co.
 Emery Mfg. Co., 43 Main St., Bradford, Pa. "Emco."
 Emlenton Refining Co., Emlenton, Pa.
 Empire Refineries, Unity Bldg., Tulsa, Okla.
 En-Ar-Co—See National Refining Co.
 Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.
 Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."
 Eureka—See Crane & Co.
 Excelsior—See Mills Oil Co.
 Expert—See Warren Refining & Chemical Co.
 Eze-Lube—See American Oil Co.
 F. V.—See Wadhams Oil Co.
 Faultless—See Hawkeye Oil Co.
 Fiske Bros. Refining Co., 24 State St., New York, N. Y.
 Foco Oil Co., 1135 Liberty St., Franklin, Pa. "Foculene."
 Foculene—See Foco Oil Co.
 Frank Oil Co., 23 W. Spring St., Titusville, Pa.
 Franklin Refining Co., Hancock Bldg., Franklin, Pa. "Venco."
 French—See Marshall Oil Co.
 G. W.—See Great Western Oil Co.
 Galena-Signal Oil Co. of Texas, Carter Bldg., Houston, Tex. "Nyfie."
 Gargoyle Mobilolls—See Vacuum Oil Co.
 Gearse—See Swan & Finch Co.
 General Oil Works Co., Traction Bldg., Indianapolis, Ind. "Reliable."
 Giant—See Moore Oil Refining Co.
 Gibbs-Brown Oil & Gasoline Co., 500-10 S. Theresa Ave., St. Louis, Mo. "Vertex."
 Globe—See Borne-Scrymser Co.
 Grand Prix—See Alexander & Co.
 Great Western Oil Co., 2855 E. 37th St., Cleveland, N. Y. "Nokarbo," "Crown," "Mogul," "G. W."
 Greenslade Oil Co., 455 W. Jefferson Ave., Detroit, Mich.
 Gulf Refining Co., Pittsburgh, Pa. "Supreme."
 Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wander Worker."
 (See page 229.)
 Harris Oil Co., A. W., Providence, R. I. (See page 673.)
 Havoline—See Indian Refining Co.
 Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."
 Haws, George A., 135 Front St., New York, N. Y. "Panhard."
 Hieronimus & Sons, J. A., 106-08 Stewart St., San Francisco, Cal. "Hilene."
 Hilene—See Hieronimus & Sons.
 Hinds & Coon, 124-26 Pearl St., Boston, Mass. "Peach."
 Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knight."
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whisoll."
 Houghton & Co., E. F., 240 Somerset St., Philadelphia, Pa.
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
 I. X. L.—See Kramer Co.
 Ideal—See Sheppard, W. S.

Everything is listed under the NOUN or principal word

CERTIFIED OILS

Certified Uniform

Robertson Lubricants Co.

21st and Race Streets, Philadelphia

INVADER GASOLINE

Eliminates Fuel Worries

INVADER OILS

Will Solve Lubrication Problems

Sold on exclusive sales proposition

Dealers solicited



Chas. F. Kellom Co.

FIRST of ALL QUALITY

Especially now that the tendency is to reduce the quality of oils in order to keep down price—

HARRIS

TRADE MARK—REG. U.S. PAT. OFF.

OILS AND GREASES

are QUALITY LUBRICANTS — the kind it is a pleasure to sell—the kind that bring Repeat Orders. Made from Pennsylvania Crude and are acknowledged to be

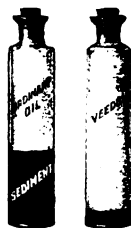
AMERICA'S LEADING LUBRICANTS

WRITE FOR OUR DEALERS PROPOSITION

A. W. HARRIS OIL CO.

BRANCH:
CHICAGO, ILL.

PROVIDENCE
R. I.



Ordinary oil
after use

Veedol
after use

Showing sediment formed after 500 miles of running

Reduces sediment 86%

AUTOMOTIVE engineers agree that sediment in ordinary oil causes 90% of all engine trouble.

The famous Veedol sediment test proves that Veedol reduces sediment by 86%. Common engine trouble is greatly reduced.

Dealers who specialize on Veedol, the lubricant that resists heat, win good will and build up powerful repeat business that pays great profits. Write today for the Veedol proposition.

TIDE WATER OIL

Sales Corporation

General Offices: 11 Broadway, New York, Boston, Philadelphia, Chicago, San Francisco, Kansas City, Mo.; Minneapolis, Atlanta, Dallas.

**For
MOTOR
CARS**



**For
MOTOR
TRUCKS**

MOTOR OILS AND GREASES

WOLVERINE LUBRICANTS COMPANY, 44 Whitehall St., NEW YORK

Distributing Agents at Convenient Points

Please mention The Automobile Trade Directory

OILS, Lubricating (Continued)

- Ideal—See Street & Co.
 Imperial Oil Co., Merchants Exchange, St. Louis, Mo.
 Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."
 Invader—See Kallom Co.
 Invader Oil Co., 76 Pearl St., New York, N. Y.
 Invinible—See Miller's Sons Co.
 Jaxonoil—See American Oil Corp.
 Jones & Bro., J., 423 Locust St., Philadelphia, Pa. "Balkan."
 Kayolene—See Kentucky Consumers Oil Co.
 Kellogg & Co., E. H., 242-44 South St., New York, N. Y.
 Kellom & Co., Chas. F., 21st & Race Sts., Philadelphia, Pa. "Invader."
 (See page 673.)
 Kendall Refining Co., Bradford, Pa.
 Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Crystalline," "Kayolene."
 Keystone Lubricating Co., 21st & Clearfield Sts., Philadelphia, Pa.
 Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.
 Knight—See Hobson Oil Co.
 Koolmotor—See Lubric Oil Co.
 Kramer Co., W. J., 214-16 Reed St., Milwaukee, Wis. "I. X. L."
 La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
 Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis. "A-B-C."
 Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.
 Liberty—See Richardson Lubricating Co.
 Loos & Dilworth, 134 S. Front St., Philadelphia, Pa. "Pioneer."
 Lubric Oil Co., Lakeside & Marquette Rd., Cleveland, O. "Koolmotor."
 Lubrolene—See Colorado Lubricating Co.
 Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Advance."
 McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swastika."
 Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
 Magnolene—See Magnolia Petroleum Co.
 Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magnolene."
 Manhattan Oil Co., 592 Vandalla St., St. Paul, Minn. "Molco."
 Manufacturers Oil & Grease Co., 2231 Junction Rd., S. W., Cleveland, O. "Polorauto," "Tuxedo."
 Marathon—See Transcontinental Oil Co.
 Marshall Oil Co., Marshalltown, Ia. "French."
 Middle States Oil Co., Engineers Bldg., Cleveland, O. "Econo-Lub."
 Miller's Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Invincible."
 Mills Oil Co., So. West St., Syracuse, N. Y. "Excelsior."
 Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.
 Mogul—See Great Western Oil Co.
 Molco—See Manhattan Oil Co.
 Monamobile—See Monarch Mfg. Co.
 Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Monamobile."
 Monogram—See New York Lubricating Oil Co.
 Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Autulubo," "Giant."
 Motorlube—See Tygett Co.
 Motul—See Swan & Finch Co.
 Murphy's—See Phoenix Oil Co.
 Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.
 National Oil & Supply Co., 150 Frelinghuysen Ave., Newark, N. J. "Viscos."
 National Refining Co., Rose Bldg., Cleveland, O. "En-Ar-Co."
 Navarre Oil Co., 8800 Nevada Ave., Cleveland, O.
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Motorol."
 No-Carbon—See Noble Refining Co.
 No-Squeak—See Crum Mfg. Co.
 Nobetr—See Sawyer Oil Co.
 Noble Refining Co., 706 Canal Rd., Cleveland, O. "No-Carbon."
 Nokarbo—See Great Western Oil Co.
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Nye, Wm. F., New Bedford, Mass.
 Nye, Wm. F., New Bedford, Mass. "Nyoll."
 Nyfte—See Galena-Signal Oil Co. of Texas.
 Nyoll—See Nye, Wm. F.
 O'Neill Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."
 Ohio Cities Gas Co., High & Chestnut Sts., Columbus, O. "Puraline," "Tioline."
 Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoll."
 Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.
 Oildag—See Cassidy Co.
 Oilsum—See White & Bagley Co.
 Opaline—See Sinclair Refining Co.
 Palace—See Tiona Refining Co.
 Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
 Panhard Oil Corp., 395 Broadway, New York, N. Y.
 Paragon Refining Co., 2935 Front St., Toledo, O. "Petrolene."
 Paramount—See Schibling, Frederick.
 Parker Refining Co., 1307 W. 11th St., Cleveland, O.
 Parolene—See Bock & Snelling Co.
 Pathfinder—See Sweet, Charles F.
 Patterson Lubricating Co., 114 Broad St., Boston, Mass.
 Penn Petroleum & Supply Co., 1224-30 Washington Ave., Philadelphia, Pa. "Primus."
 Pennzoll—See Oil City Oil & Grease Co.
 Pennzoll—See Panama Lubricants Co.
 Perfection—See Crew Levick Co.
 Perfection—See Wood Co.
 Perry Oil Co., 372 Central Ave., Pawtucket, R. I.
 Petrolene—See Paragon Refining Co.
 Petroleum Products Co., 29th St. & B. & O. R. R., Pittsburgh, Pa. "Sound-Proof."
 Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."
 Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphy."
 Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."
 Pioneer—See Loos & Dilworth.
 Polarine—See Standard Oil Co. of N. Y.
 Polorauto—See Manufacturers Oil & Grease Co.
 Powaero—See Power-Oil Co.
 Power-Oil Co., St. Louis, Mo. "Powerol," "Powaero," "Powerpull."
 (See page 671.)
 Powero—See Tide Water Oil Sales Corp.
 Powerol—See Power-Oil Co.
 Powerpull—See Power-Oil Co.
 Primus—See Penn Petroleum & Supply Co.
 Puraline—See Ohio Cities Gas Co.

Everything is listed under the NOUN or principal word

OILS, Lubricating (Continued)

- Pure Oil Co., 1306 First St., S., Minneapolis, Minn. "Puritan."
- Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.
- Puritan—See Pure Oil Co.
- Puritan Oil & Paint Co., 1218 W. 70th St., Cleveland, O.
- Pynoleum—See Belden & Co.
- Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.
- Quaker State—See Phinney Bros. Co.
- Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
- Red Line, Inc., Grand Rapids, Mich. (See page 667.)
- Regal—See Stevenson Bro. & Co.
- Reighard Oil Co., H. E., 929 24th St., Altoona, Pa. "Crudeline." (See page 979.)
- Reliable—See Colgan Mfg. & Supply Co.
- Reliable—See General Oil Works Co.
- Reynold—See Reynolds Oil & Grease Co.
- Reynolds Oil & Grease Co., 123 Oliver St., Boston, Mass. "Reynold."
- Richardson Lubricating Co., Front & Maine Sts., Quincy, Ill. "Liberty."
- Rie-Nie—See Durkee-Atwood Co.
- Robertson Lubricants Co., 21st & Race Sts., Philadelphia, Pa. (See page 673.)
- Robinson & Son Co., Wm. C., 32 South St., Baltimore, Md. "Autoline."
- Rome—See Howard Lubricants Co.
- Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allegheny."
- Royal Petroleum Co., 204 E. 74th St., New York, N. Y.
- Ruby—See Street & Co.
- Ruby—See Bock & Snelling Co.
- Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Blue Ribbon," "Nobetr."
- Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."
- Shappell Petroleum Products Co., N. West St. Rd., Lima, O.
- Sheppard, W. S., 21 Lawrence St., Newark, N. J. "Ideal."
- Sinclair Refining Co., Chicago, Ill. "Opaline," "Sinco." (See page 677.)
- Sinco—See Sinclair Refining Co.
- Sloane & Zook, 101 Main St., Bradford, Pa.
- Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
- Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
- Sound-Proof—See Petroleum Products Co.
- Spears' Sons Co., Alden, 140 Sixth St., Boston, Mass.
- Speed Oil—See Drake Oil Co.
- Speedway—See Red "C" Oil Mfg. Co.
- Spoco Oil Co., 818 Larimer St., Denver, Colo.
- Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Polarine," "Zerolene."
- Sterling Oil Corp., 608 Swan St., Buffalo, N. Y. "X-Tra."
- Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Regal."
- Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."
- Street & Co., J. D., 41st St. & Park Ave., St. Louis, Mo. "Ideal," "Ruby," "Economy."
- Sullivan Oil Co., 418 N. Wells St., Chicago, Ill.
- Sun Co., Finance Bldg., Philadelphia, Pa. "Sunoco."
- Sunoco—See Sun Co.
- Suor Oil Products Corp., 1-7 Howell St., Buffalo, N. Y. "Surco."
- Superba—See Curry Bros. Oil Co.
- Superior Oil Co., 1426 W. Third St., Cleveland, Ohio.
- Supreme—See Gulf Refining Co.
- Surco—See Suor Oil Products Corp.
- Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
- Swan & Co., Alden S., 185 Front St., New York, N. Y. "Swanoline."
- Swan & Finch Co., 165 Broadway, New York, N. Y. "Atlas," "Crown," "Motul," "Gear-ese," "Aerul," "Calypsol."
- Swanoline—See Swan & Co.
- Swastika—See McLean-Jones Oil & Supply Co.
- Sweet, Charles F., 247 State St., Hartford, Conn. "Pathfinder."
- Syco—See Symonds Co.
- Symond Co., Joseph H., Westfield, Mass. "Syco."
- Texasco—See Texas Co.
- Texas Co., 17 Battery Pl., New York, N. Y. "Texasco."
- Thermo—See Haggerty Refining Co.
- Three-In-One Oil Co., 165 Broadway, New York, N. Y.
- Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Veedol," "Powerol." (See page 673.)
- Tiolene—See Ohio Cities Gas Co.
- Tiona Refining Co., Madison Ave. & Belt Ry., Indianapolis, Ind. "Palace."
- Transcontinental Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa. "Marathon."
- Tuxedo—See Manufacturers Oil & Grease Co.
- Tygart Co., E. A., 126 N. Front St., Philadelphia, Pa. "Motorlube."
- Underhay Oil Co., 276 Franklin St., Boston, Mass.
- Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal. "Aristo."
- Union Petroleum Co., Widener Bldg., Philadelphia, Pa.
- Unity—See Curry Bros. Oil Co.
- Vacuum Oil Co., 61 Broadway, New York, N. Y. "Gargoyle Mobilols."
- Valley Oil Co., Century Bldg., Cleveland, O. "Carolene."
- Valvoline Oil Co., 11 Broadway, New York, N. Y.
- Valvone—See Belden & Co.
- Veedol—See Tide Water Oil Sales Corp.
- Velvet—See O'Neil Oil & Paint Co.
- Velvet—See Sutherland & Co.
- Venco—See Franklin Refining Co.
- Ventura Refining Co., 458 S. Spring St., Los Angeles, Cal.
- Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.
- Viscomotor—See Viscosity Oil Co.
- Viscos—See National Oil & Supply Co.
- Viscosity Oil Co., 1101-03 W. 37th St., Chicago, Ill. "Viscomotor."
- Vortex—See Gibbs-Brown Oil & Gasoline Co.
- Wadhams Oil Co., 359 Clinton St., Milwaukee, Wis. "F. V."
- Warren Refining & Chemical Co., Cleveland, O. "Expert."
- Waverly Oil Works Co., Pittsburgh, Pa. "Defiance." (See page 671.)
- Whale—See Nye, Wm. F.
- White & Bagley Co., Worcester, Mass. "Oilzum." (See page 671.)
- Whizoll—See Hollingshead Co.
- Willhelm Oil Co., 2361 Hampden Ave., St. Paul, Minn. "Willoco."
- Willoco—See Willhelm Oil Co.
- Winn, Wm. R., 143 Malden Lane, New York, N. Y.
- Winne, Howard B., 714 W. Jackson Blvd., Chicago, Ill.
- Wolf's Head—See Wolverine Lubricants Co.

Everything is listed under the NOUN or principal word

OILS, Lubricating (Continued)

Wolverine Lubricants Co., 44 Whitehall St., New York, N. Y. "Wolf's Head."
(See page 673.)

Wonder Worker—See Hall-Thompson Co.

Wood Co., W. A., 373 Atlantic Ave., Boston, Mass. "Perfection."

X-Tra—See Sterling Oil Corp.

Xylite—See Stock Xylite Grease & Oil Co.

Youkim—See Young Co.

Young Co., Frank L., 111 Purchase St., Boston, Mass. "Youkim."

Zerolene—See Standard Oil Co. of N. Y.

Zone Oil Co., W. 11th St., Cleveland, O.

Zurn Co., O. F., 2736-28 N. Broad St., Philadelphia, Pa. "Zurnoll."

Zurnoll—See Zurn Co.

OILS, NON-FLUID—See Greases, Cup and Gear

OLDHAM COUPLINGS—See Couplings, Magneto and Generator

ONE-MAN TOPS—See Tops

OPEN END WRENCHES—See Wrenches, Nut and Bolt

OPENERS, Curtain

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

Blackmore, Charles C., Dayton, O.
(See page 677.)

Ervin, Horace, Ogontz, Pa.

Holcker-Eiberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.

Itjney Curtain Co., 30 N. Ludlow St., Dayton, O.

Kelly & Towers, 1618 Walnut Ave., Cleveland, O. "Towers."

Midway Mechanical Co., St. Paul, Minn. "U-Fit-it."

Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

Sterling Top & Equipment Co., 513-22 W. 57th St., New York, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Towers—See Kelly & Towers.

U-Fit-it—See Midway Mechanical Co.

OPENERS, Curtain, for Fords

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

Blackmore, Charles C., Dayton, O.
(See page 677.)

OPENERS, Electric and Pneumatic Garage Door

(For manually operated openers—See Holders and Openers, Garage Doors.)

Allith-Prouty Co., Danville, Ill.
(See page 535.)

Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 665 and 829.)

Doan & Co., Howard E., Joliet, Ill.

Foss-Hughes Co., 31st & Market Sts., Philadelphia, Pa.

Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.

Lovejoy Automatic Door Opener Co., 412-14 Second St., Laramie, Wyo.

Miller & Son Co., Geo. B., Waterloo, Iowa. "Perkins."

Peerless Door Control Co., 508 S. Wabash Ave., Chicago, Ill.

Perkins—See Miller & Son Co.

R. W. Stewart—See Richards-Wilcox Mfg. Co.

Richards-Wilcox Mfg. Co., Third St. & C. E. & Q. R. R. Tracks, Aurora, Ill. "R. W. Stewart."

OPENERS, GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door

OPENERS, PET COCK, FOR FORDS—See Wrenches, Oil Cock

OPENERS, PNEUMATIC GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door

ORNAMENTS, Radiator

(For Flag Ornaments—See Flags; also Holders, Flag; for Metal Monograms—See Monograms, Ornamental)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Allen Pin Co., 101 Sabin St., Providence, R. I.

Arkay—See Riley-Klots Mfg. Co.

Art Metal Works, Aronson Sq., Newark, N. J. "Moto-Fan," "Ronson."
(See page 495.)

Ashland Products Co., 50 E. Ninth St., Ashland, O. "Victory." (See page 539.)

Cramp & Sons Ship & Engine Building Co., William, Philadelphia, Pa.
(See page 209.)

Dalkranian Co., J. K. & J. K., 412 Hill St., West Hoboken, N. J. "Metroplane."

General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.

Johnson & Seckendorf, 9 W. 45th St., New York, N. Y.

Metalware Corp., 141 W. Austin Ave., Chicago, Ill.

Metroplane—See Dalkranian Co.

Moto-Fan—See Art Metal Works.

Pierrot Novelty Co., Merchants Bank Bldg., Indianapolis, Ind.

Reibberger Mfg. Co., 548 Webster Ave., Chicago, Ill.

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Robbins & Myers Co., Springfield, O.

Ronson—See Art Metal Works.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.)

(See page 253.)

Stevens & Co., 375 Broadway, New York, N. Y. (See page 201.)

Victory—See Ashland Products Co.

ORNAMENTS, TRANSFER—See Transfers, Decalcomania

ORPHAN CAR PARTS—See Parts, Orphan Car Repair

OUTBOARD MOTORS, MOTOR BOAT—See Engines, Motor Boat Outboard

OVERALLS—See Clothing, Motorists

OVERHEAD VALVE SILENCERS—See Silencers, Overhead Valve

Everything is listed under the NOUN or principal word

SINCLAIR OILS

*Petroleum Products
of Quality*

LUBRICANTS
GASOLINE
KEROSENE
NAPHTHA
FUEL OIL
GAS OIL
ROAD OIL
PARAFFINE WAX

SINCLAIR
REFINING COMPANY
CHICAGO

The
**PACKARD
CADILLAC
HUDSON
REO
FRANKLIN
LOCOMOBILE**

and most all other
new models are
equipped with the



BLACKMORE DOOR CURTAIN OPENER

Fully protected by basic patents
as the latest improvement in top curtains.

Curtains that open and close with the
doors give the normal winter weather pro-
tection that curtains should without the
annoyance and delay of unbuttoning them.
This final improvement in quick acting
curtains makes any car as good as a Limou-
sine, and does away with heavy detachable
bodies for winter use.

Your top maker can give you this result
on your present car at a small cost.

Easy selling specialty for top makers

CHARLES C. BLACKMORE
DAYTON, OHIO

BLACKMORE'S CURTAIN OPENER IS THE ONLY ONE THAT CAN BE USED ON ALL TYPES OF CARS AND TRUCKS.

STANDARD RIMS

30 Seconds Complete Change

What the Standard Rim Does

It Saves time and patience.
It Saves soiling your clothes.
It Saves using tire irons and tools.
It Saves all troubles in changing tires.

Therefore every man or woman who
drives a car will want to have it
equipped with these Rims.

We put the Rim in the Tire instead
of the Tire on the Rim, doing away
with the stretching and forcing the
Tire over the Rim; this is in itself a
big saving of Tires.

If your jobber is unable to supply you
write direct to us.

Patented in the United States and
Canada.

Standard Rim Corporation
1482 Broadway, New York City

MANUFACTURERS

of

Demountable Rims

Write for
Specifications
and Prices

Colton Demountable Rim Corp.

23 Water Street
New York City

Please mention The Automobile Trade Directory

OXY-ACETYLENE WELDERS CLAMPS— See Clamps, Oxy-Acetylene Welders

OXY-ACETYLENE WELDING—See Welding, Autogenous

OXY-ACETYLENE WELDING MACHINES— See Machines, Autogenous Welding

OXYGEN CYLINDER CLEANING APPARATUS— See Machines, Engine Decarbonizing

OXYGEN TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

OXYGEN TANKS—See Tanks, Oxygen

PACKING, Asbestos and Fibrous

A-B-C—See American Brake-Lining Co.
Adpasco—See Advance Packing & Supply Co.
Advance Packing & Supply Co., 80 E. Lake St., Chicago, Ill. "Bestalline," "Tenax," "Endura," "Adpasco." (See page 679.)
Alabestos—See Consolidated Packing & Supply Co.
Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y. (See page 679.)
Ambler—See Keasbey & Mattison Co.
American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 679.)
American Mills Co., 39 W. 19th St., New York, N. Y. (See pages 579 and 580.)
Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite," "Hydroll," "Tauril." (See page 679.)
Ankorite—See Anchor Packing Co.
Asbestos & Rubber Works of America, 1810 Broadway, New York, N. Y. "Motobestos." (See page 601.)
Bestalline—See Advance Packing & Supply Co.
Burgin & Co., 487 Broadway, New York, N. Y. "Likehyd."
Calibestos—See General Asbestos & Rubber Co.
Consolco—See Consolidated Packing & Supply Co.
Consolidated Packing & Supply Co., 21 Barclay St., New York, N. Y. "Wisoid," "Alabestos," "Consolco." (See page 461.)
Crandall Packing Co., Palmyra, N. Y.
Demon—See Hart Packing Co.
Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. (See page 583.)
Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."
Durabestos—See United Asbestos & Packing Co.
Duraco—See United Asbestos & Packing Co.
Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J. "Motobestos."
Endura—See Advance Packing & Supply Co.
Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa.
Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
Fibre Finishing Co., 73 Fremont St., Boston, Mass. "Vellumoid."
Garlock Packing Co., Palmyra, N. Y.
Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.

General Asbestos & Rubber Co., Charleston, S. C. "Calibestos." (See Back Cover.)
Goodyear Tire & Rubber Co., Akron, O. (See page 963.)
Gratone—See Wilder Mfg. Co.
Hart Packing Co., 144 High St., Boston, Mass. "Demon."
Hydroll—See Anchor Packing Co.
J. M. Mogul—See Johns-Manville Co.
Johns-Manville Co., H. W. Madison Ave. & 41st St., New York, N. Y. "J. M. Mogul."
Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler."
Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.
Likehyd—See Burgin & Co.
Luxoid—See Thermold Rubber Co.
Mibroco—See Mikesell Brothers Co.
Mikesell Brothers Company, 156 N. La Salle St., Chicago, Ill. "Mibroco," "Ronuk," "Wabash." (See page 315.)
Motobestos—See Asbestos & Rubber Works of America.
Motobestos—See Empire Rubber & Tire Co.
Purbestos—See Wilder Mfg. Co.
Reliance—See Dugas-Hundley Corp.
Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuftex."
Ronuk—See Mikesell Brothers Co.
Springbestos—See Springman Paper Products Co.
Springman Paper Products Co., Detroit, Mich. "Springbestos," "Springrite." (See page 631.)
Springrite—See Springman Paper Products Co.
Staybestos Mfg. Co., 5534 Lens St. (German-town), Philadelphia, Pa.
Tauril—See Anchor Packing Co.
Tenax—See Advance Packing & Supply Co.
Thermold Rubber Co., Trenton, N. J. "Luxoid." (See page 551.)
Titetex—See Wilder Mfg. Co.
Tuftex—See Rochester Woven Belting Co.
United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Duraco," "Durabestos."
Vellumoid—See Fibre Finishing Co.
Wabash—See Mikesells Brothers Co.
Wearwell Gasket & Packing Co., Camden, N. J. (See page 583.)
Wilder Mfg. Co., 1819 N. 17th St., St. Louis, Mo. "Purbestos," "Titetex," "Gratone." (See page 331.)
Wisoid—See Consolidated Packing & Supply Co.

PACKING, FIBROUS—See Packing, Asbestos

PACKING, METALLIC—See Gaskets, Metallic

PACKING, Rubber

Boston Belting Co., 34 Linden Park St., Boston, Mass.
Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal," "Sandow," "Wampus," "Old Crow." (See page 531.)
Crandall Packing Co., Palmyra, N. Y.
Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."
Firo—See New York Belting & Packing Co.
Garlock Packing Co., Palmyra, N. Y.

Everything is listed under the NOUN or principal word

TRADE TENAX MARK

The Original Blue Sheet

**Compressed
Asbestos
Packing**

**Can't
Melt,
Burn,
Squeeze
Out or Rot**



Withstands heat and pressure of gas engine explosions, exhausts, etc., perfectly.
Sheets 50x50 1/64 to 1/8 inch thickness. Gaskets cut to order. Buy from your jobber or dealer—or write for sample and prices.

ADPASC Gasket Paper

For every use, except in Contact with Extreme Heat. Waterproof—dependable—economical. Used in thousands of shops. Sheets 24 in. by 40 in.
JOBBER, write if not supplied.

ADVANCE PACKING AND SUPPLY COMPANY
80 East Lake Street Chicago, Illinois
Pacific Coast Representatives: Allied Industries, Inc.,
233 Minna St., San Francisco, Calif.; 340 Alameda St.,
Los Angeles, Cal., 1253 First Ave. S., Seattle, Wash.

"ALLTEX" BRAKE LINING

Every Foot Guaranteed for 1 Year

**A Solid Woven Pure
Asbestos Brake Lining**

WRITE FOR OUR BOOKLET AND SAMPLES

"ALLTEX" WHITE FORD LINING

**Used by All Ford
Service Stations**

WRITE IMMEDIATELY FOR OUR PRICES,
BOOKLET AND SAMPLES

Manufactured by

Alltex Weaving & Specialty Co.
212 BROADWAY NEW YORK

A B C BRAKE LINING

"Every Foot Guaranteed"

ASBESTOS SHEET PACKING
Treated and Graphited

FIBRE SHEET PACKING
"Tough as Rawhide"

FABRIC FAN BELTS
Woven Endless

CLUTCH FACINGS
Any Size

RADIATOR HOSE
8-Ply Standard. 5 foot and 50 foot
lengths

AMERICAN BRAKE-LINING COMPANY
LANSDALE, PA.

A B C BRAKE LINING

ANKORITE

Automobile Accessories

Universally Known
Universally Used

Brake Lining, Hydroil sheet and Gaskets, Clutch Facings, (Moulded and Woven asbestos), Tauril sheet and Gaskets, Radiator Hose and Connections, Apex Friction Tape, Pump Packing, Universal and Magneto Discs.

**THE ANCHOR PACKING
COMPANY**

72 Murray Street New York

Branches: Baltimore, Boston, Chicago, Cleveland, Denver, Detroit, Hazleton, Minneapolis, Montreal, New Orleans, Norfolk, Omaha, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle.

Please mention The Automobile Trade Directory

PACKING, Rubber (Continued)

Goodyear Tire & Rubber Co., Akron, O. (See page 963.)
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Hart Packing Co., 144 High St., Boston, Mass.
 Home Tire Co., Trenton, N. J.
 Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 National India Rubber Co., Bristol, R. I.
 New York Belting & Packing Co., 91 Chambers St., New York, N. Y. "Firo."
 Old Crow—See Cincinnati Rubber Mfg. Co.
 Quaker City Rubber Co., 623 Market St., Philadelphia, Pa.
 Reliance—See Dugas-Hundley Corp.
 Royal—See Cincinnati Rubber Mfg. Co.
 Sandow—See Cincinnati Rubber Mfg. Co.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.
 Wampus—See Cincinnati Rubber Mfg. Co.

PADDING, BODY—See Lining, Body or Frame

PADDING, FRAME—See Lining, Body or Frame

PADLOCKS—See Locks, Cabinet and Pad

PADS, GRIP—See Protectors, Door

PADS, LICENSE—See Numbers, License

PADS, PEDAL—See Grips, Pedal

PAIS, FOLDING—See Buckets, Collapsible

PAINT BRUSHES—See Brushes, Paint

PAINT DRYING ROOMS—See Rooms, Paint and Varnish Drying

PAINT FILLERS—See Fillers, Paint

PAINT REMOVERS—See Removers, Paint, Enamel and Varnish

PAINTS, Aluminum and Bronze

Alustrum—See Devos & C. T. Reynolds Co.
 Anchor—See Bronze Powder Works Co.
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Baer Bros., 433-45 W. 37th St., New York, N. Y.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Bilchaco—See Billings-Chapin Co.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."
 Binswanger & Co., E., 115 N. Fourth St., Philadelphia, Pa.
 Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
 Bronze Powder Works Co., 801 Magnolia Ave., Elizabeth, N. J. "Anchor," "Vulcan."

Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y. "Alustrum."
 Dutch—See Van Cleef Bros.
 Gerstendorfer Bros., 231 E. 43d St., New York, N. Y. "Sapolin."

Jewel—See Wadsworth-Howell & Co. N. Y.

Kemp Co., W. H., 1737 Broadway, New York.
 Mentauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesoco." (See page 277.)

Norwesoco—See Northwestern Chemical Co.
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Permatex—See Benoit, Constant A.

Sapolin—See Gerstendorfer Bros.

Schlegel Mfg. Co., Oscar, 124 E. 18th St., New York, N. Y.

Silkup—See Arnold, N. B.

Uhlfelder Co., Leo, 130-32 W. 29th St., New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Vulcan—See Bronze Powder Works Co.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

PAINTS, BRONZE—See Paints, Aluminum

PAINTS, CYLINDER—See Paints, Exhaust Pipe

PAINTS, Enamel

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)

Akron Varnish Co., Akron, O. "Imperial."
 American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.

Armitage & Co., John L., 245 Thomas St., Newark, N. J.

Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.

Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Mar."

Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.

Bay State—See Wadsworth, Howland & Co.

Benoit, Constant A., Brooklyn, N. Y. "Permatex Auto Lac." (See page 227.)

Berry Bros., 211 Lieb St., Detroit, Mich.

Bilchaco—See Billings-Chapin Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."

Bird & Co., J. A. & W., 33 Pearl St., Boston, Mass. "Ripolin." (Importers.)

Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn. "Crocketts."

Blaxshine—See Twin City Varnish Co.

Boyer Chemical Co., 18 E. Kinzie St., Chicago, Ill.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Cleveland Varnish Co., Cleveland, O. (See page 1027.)

Columbus Varnish Co., Columbus, O. "Peerless." (See page 301.)

Cov-R-Mar—See Auto Products Mfg. Co.

Crocketts—See Bissell Varnish Co.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.

Everything is listed under the NOUN or principal word

PAINTS, Enamel (Continued)

Devoe & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.
 Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 Efecto—See Pratt & Lambert.
 Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa.
 Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
 Forest City Paint & Varnish Co., 3234 Lakeside Ave., Cleveland, O.
 Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O. "Royal."
 Hanline Bros., 23-25 Howard St., Baltimore, Md.
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
 Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
 I. C. U.—See Livingston Co.
 Imperial—See Akron Varnish Co.
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Koppak—See Koppers Products Co.
 Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "Koppak."
 Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
 Mango Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Montauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.
 Once-Over—See Torkelson Mfg. Co.
 Peerless—See Columbus Varnish Co.
 Permatex Auto Lac—See Benoit, Constant A.
 Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Efecto."
 Quickwork—See Standard Varnish Works.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Ripolin—See Bird & Co.
 Royal—See Glidden Co.
 Royalcote—See Wilhelm Co.
 Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 So-E-Zy—See Watson Paint & Glass Co.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Once-Over."
 Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.
 Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Blaxshine."
 Valentine & Co., 456 Fourth Ave., New York, N. Y.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."
 Watson Paint & Glass Co., McKeesport, Pa. "So-E-Zy."
 Wilhelm Co., A., Third & Bern Sts. Division, Reading, Pa. "Royalcote."
 Won Kote Enamel Co., 16 N. Brook St., Geneva, N. Y.

PAINTS, Exhaust Pipe, Muffler and Cylinder

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
 Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Chip."
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Bulger Varnish Co., William, 3055 E. 87th St., Cleveland, O.
 Century—See Arnstein, Eugene.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 E-Fec-Tiv—See Permatite Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
 Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
 Mirrolite Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.
 Nev-R-Chip—See Auto Products Mfg. Co.
 Never-Burn—See Northwestern Chemical Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Never-Burn." (See page 277.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.
 Peerless—See Columbus Varnish Co.
 Permatex—See Benoit, Constant A.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Rie-Nie—See Durkee-Atwood Co.
 Royalcote—See Wilhelm Co.
 Silkup—See Arnold, N. B.
 Stowell, E. R., Oden, Mich.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Wonder Worker—See Hall-Thompson Co.
 Wilhelm Co., Division A, Third & Bern Sts., Reading, Pa. "Royalcote."

PAINTS, Luminous

(For Illuminating clock, meter or gage dials; for covers who apply the compound—See Dials, Luminous)
 Cold Light Mfg. Co., 50 Union Sq., New York, N. Y. "Marvelite."
 Cummings Chemical Co., W.L. (Lansdowne), Philadelphia, Pa.
 Luma—See Radium Chemical Co.
 Marvelite—See Cold Light Mfg. Co.
 Radium Chemical Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."

PAINTS, MUFFLER—See Paints, Exhaust Pipe**PAINTS, PHOSPHORESCENT—See Paints, Luminous**

Everything is listed under the NOUN or principal word

PAINTS, Rim

(See also Paints, Aluminum and Bronzes; also Paints, Enamel)

Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
 (See page 363.)
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Be-Be-Co—See Boston Blacking Co.
 Boardalee, J. W., Elmira, N. Y.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Rim Kote." (See page 229.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Jewel—See Wadsworth-Howland Co.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesaco." (See page 277.)
 Norwesaco—See Northwestern Chemical Co.
 Peerless—See Columbus Varnish Co.
 Permatex—See Benoit, Constant A.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Rie-Nie—See Durkee-Atwood Co.
 Rim Kote—See Hall-Thompson Co.
 Silkup—See Arnold, N. B.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

PAINTS, Rubber

(For refinishing rubber mats and matting and painting tires)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Tire-ite." (See page 363.)
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Preservo." (See page 229.)
 Be-Be-Co—See Boston Blacking Co.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Velvet"
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sole Distributors for Sterling Varnish Co., Pittsburgh, Pa. "Nitrex.")
 Century—See Arnstein, Eugene.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
 Dol-Em-Up—See Western Vulcanizer Mfg. Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie Tyre Re-Nu."
 Dutch—See Van Cleef Bros.
 E-Fec-Tiv—See Permatite Mfg. Co.
 French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
 Henry's—See Perfectfix Rubber Co.
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 I. C. U.—See Livingston Co.
 Instant Products Co., 21 Cambria St., Boston, Mass.
 Jewel—See Wadsworth-Howland Co.
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Nitrex—See Cassidy Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Tire-Lac." (See page 277.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Rub-ber-Nu."
 Peerless—See Columbus Varnish Co.
 Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Permatex—See Benoit, Constant A.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Preservo—See Atlas Auto Supply Co.
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Tyrokote."
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie Tyre-Re-Nu—See Durkee-Atwood Co.
 Rogers—See Detroit White Lead Works.
 Rub-Ber-Nu—See Nu-Back Mfg. Co.
 Silkup—See Arnold, N. B.
 Sterling Varnish Co.—See Cassidy Co.
 Tire-ite—See Adams & Elting Co.
 Tire-Lac—See Northwestern Chemical Co.
 Tyrokote—See Puritan Soap Co.
 Velvet—See Bradley & Vrooman Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dol-Em-Up."
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

PAINTS, TIRE—See Paints, Rubber

PAINTS and COLORS

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
 Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
 Bay State—See Wadsworth, Howland & Co.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Oughto."
 Bissell Varnish Co., 277 Mountain Grove St., Bridgeport, Conn. "Crooketta."
 Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.
 Bulls-Eye—See Zinsser & Co.
 Capitol City—See Indianapolis Paint & Color Co.
 Certain-teed Products Corp., Boatmen's Bank Bldg., St. Louis, Mo.

Everything is listed under the NOUN or principal word



E. & W. Truck Attachments One-Two-Three-Ton

**Internal Gear and Worm
Drive are sold with body and cab.**

The E. & W. makes a heavy duty truck of any car, from a Ford to a Pierce-Arrow.

Dealers—Write for our proposition—
Immediate Deliveries.

E. & W. Manufacturing Co.
Oregon Street
MILWAUKEE, WIS.

REAMERS

TO MEET ALL
REQUIREMENTS

**Cashman Adjustable
Precision
Production Reamers
include**

Solid Adjustable Type Reamers, ranging in size from $\frac{1}{8}$ " to $2\frac{1}{2}$ ", made in both taper and straight shank.

Adjustable Shell Reamers, sizes run from $1\frac{1}{4}$ " to $6\frac{1}{2}$ ". Any sizes larger than this are made special to order. Hand Aligning Reamers furnished upon request. Adjustable Hand Reamers ranging in sizes from $\frac{1}{8}$ " up to 2".

The Hand Reamers are furnished with O. H. steel blades properly treated. The Solid Adjustable and Shell Types are furnished with blades made of the finest grade of high speed steel.

Our Reamers finish to bottom of hole and have the least number of parts of any adjustable reamers manufactured.

All orders given prompt attention. Catalog describing our complete line on request.

CASHMAN TOOL COMPANY

Waynesboro

Pennsylvania



THE REFERENCE BOOK

"EVERYTHING ELECTRICAL FOR THE MOTOR"

WE WILL SEND YOU A COPY FREE ON REQUEST

Every dealer and repair man who calls himself up-to-date should have for ready reference a copy of our latest reference book on "Everything Electrical for the Motor."

The REFERENCE BOOK illustrates each part that goes into the construction of all of the standard makes of lighting, starting and ignition systems, showing the number of the part and the price; also the dealer's discount.

The REFERENCE BOOK contains illustrations of practically every conceivable device to enable the electrical service station to quickly perform its work at a minimum cost and in the shortest possible time. New and efficient methods for locating troubles are set forth. Instruments specially constructed to trace faults in wiring and insulation.

The REFERENCE BOOK opens up a fund of information for the repair man and for the electric service station. This book is sent only to the trade, consequently we request that you make application on your business letterhead.

It Is Free For The Asking—Write For It To-day.

MOTOR ELECTRICAL EQUIPMENT CO.
CHICAGO 1251 So. Michigan Avenue ILLINOIS

Please mention The Automobile Trade Directory

PAINTS and Colors (Continued)

Chicago White Lead & Oil Co., 1454 S. Western Ave., Chicago, Ill. "King."
 Cincinnati Varnish Co., 311 South St., Cincinnati, O.
 Columbus Varnish Co., Columbus, O. (See page 361.)
 Crockett—See Bissell Varnish Co.
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.
 Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.
 Dibble Color Co., 445 Larned St. W., Detroit, Mich.
 Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.
 Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa.
 Fix-A-Mar—See Panvar Co.
 Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 French & Co., Samuel H., York Ave., Fourth & Calowhill Sts., Philadelphia, Pa.
 Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Graves Co., N. Z., 23-26 S. Third St., Philadelphia, Pa.
 Hanline Bros., 23-25 Howard St., Baltimore, Md.
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
 Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa.
 Heath & Milligan Mfg. Co., 1333 Seward St., Chicago, Ill.
 High Standard—See Lowe Bros. Co.
 Hildreth Varnish Co., 90 West St., New York, N. Y.
 Hoffman Paint & Varnish Co., 3 Medford St., Boston, Mass.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Capitol City."
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Keystone Paint & Filler Co., Munsey, Pa.
 King—See Chicago White Lead & Oil Co.
 Lowe Bros. Co., 450 E. Third St., Dayton, O. "High Standard."
 Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
 Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
 Moore & Co., Benjamin, 281-33 Front St., Brooklyn, N. Y.
 Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.
 Mountain Varnish & Color Works, Toledo, O.
 Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.
 Nice, Eugene H., 268-74 S. Second St., Philadelphia, Pa.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 Oughto—See Billings-Chapin Co.
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Fix-A-Mar."
 Patterson-Sargent Co., E. 33th & St. Clair Sts., Cleveland, O.
 Patton Paint Co., 213 Lake St., Milwaukee, Wis.
 Peerless—See Columbus Varnish Co.
 Pierce Co., F. O., 12 W. Broadway, New York, N. Y.
 St. Louis Surfacers & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.

Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 Shrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.
 Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y.
 Valentine & Co., 456 Fourth Ave., New York, N. Y.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y.
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bull's-Eye."

PAINTS and VARNISHES for Fords

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 363.)
 Ad-el-ite—See Adams & Elting Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.
 Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 229.)
 Hanline Bros., 23-25 Howard St., Baltimore, Md.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
 Norwesco—See Northwestern Chemical Co.
 Penaslee-Gaulbert Co., Louisville, Ky. (See page 693.)
 Peerless—See Columbus Varnish Co.
 Permatex—See Benoit, Constant A.
 Rie-Nie—See Durkee-Atwood Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill.
 Wonder Worker—See Hall-Thompson Co.

PANELS, Wood

Algoma Panel Co., Algoma, Wis.
 Almabee Veneer & Seating Co., Algoma, Wis.
 American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.
 Buffalo Hardwood Lumber Co., 940 Seneca St., Buffalo, N. Y.
 Casco—See United States Plywood Co.
 Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
 Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
 Dover Mfg. Co., 144 Canoe Pl., Woodhaven, N. Y.
 Eggers Veneer Seating Co., F., 19th St. & Jefferson Ave., Two Rivers, Wis.
 Grand Rapids Veneer Works, 800-900 Front St., Grand Rapids, Mich.
 Haskellite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Jansen Mfg. Co., 14th Ave. & Howard St., Detroit, Mich.
 Keyes Products Co., 120 Broadway, New York, N. Y. "Nevasplit."
 Louisville Veneer Mills, 1100-40 Fulton St., Louisville, Ky.

Everything is listed under the NOUN or principal word



PROVEN AUTOMOTIVE PARTS AND EQUIPMENT

For Passenger Cars—Trucks—Tractors—etc.

A SELLING SERVICE BACKED BY A BIG ORGANIZATION

Established over 13 years

The ZINKE COMPANY sells 94% of the jobbers in the entire United States, Canada, Hawaii, the Philippines, Cuba and various foreign outlets through its big export connections.

The ZINKE COMPANY sells exclusively to jobbers and manufacturers of passenger cars, trucks, tractors, etc., and is equipped to handle the entire output of any factory with which it becomes associated.

The ZINKE COMPANY relieves the manufacturer of a burdensome and expensive selling department. Consider the tremendous value of being able to have your products introduced by an established selling organization directly into the markets that you wish to enter and at a minimum predetermined selling cost.

The ZINKE COMPANY is departmentized and operated after the most modern and approved selling methods. Accumulative value of over 13 years has made the ZINKE COMPANY foremost in its field.



Write for complete details

The Zinke Company

1323-1325 Michigan Ave.

Chicago, U. S. A.

THE ZINKE COMPANY

Indiana Head Lamps

These lamps have always been noted for their high quality, modern approved design and general serviceability. Standard finishes are all black and black and nickel.



No. 1119
11½ in. front
Prop centers 8¾ in.
No. 1020
10½ in. front
Prop centers 7 in.
No. 916
9½ in. front
Prop centers 7 in.



No. 916-F
9½ in. front
Single stem prop for
late model Ford only



No. 415-F
4½ in. front
Semaphore lens
For late model Ford
No. 415
Bracket to fit flat
or round props



No. 32
3½ in. front
Red semaphore lens
Bracket will fit either
flat or round props
No. 32-F
Same as above with
prop for late model
Ford
No. 32-BB
Same as above
Props for Buick cars
No. 32 S. O.
Special double bulb
tail light assembly
for Ford cars



No. 9
9 in. front
Prop centers 7 in.

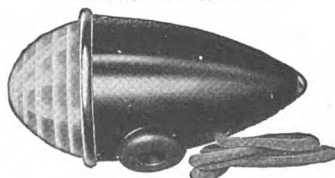
No. 11-G
10 in. front
Prop centers 8¾ in.
Heavy Duty Truck Type—Gas
No. 11-E
10 in. front
Prop centers 8¾ in.
Heavy Duty Truck Type—Electric



No. 10
10½ in. front
Prop centers 8¾ in.



No. 306
3½ in. diam.
3 in. frosted star
glass lens



4½ in. long, including lens
Extreme diameter, 2½ in.
Beehive moonstone lens



No. 717
7½ in. front
Universal bracket
Fits all windshields
3 in. mirror

Information in regard to additional types of lamps will be furnished
MANUFACTURERS
INDIANA LAMP COMPANY, Connersville Ind.

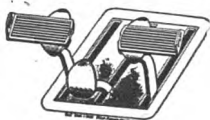
SALES DEPARTMENT

To the Jobber
The Zinke Company, No 1323 Michigan Ave., Chicago, Ill.

To the Manufacturer
The American Distributing Co., No. 60. Kresge Building, Detroit, Mich.

THE ZINKE COMPANY

UTILITY AUTOMOTIVE PRODUCTS



Price Per Set, \$1.25

Utility Pedals for Fords

"The absolutely necessary accessory for Fords" sums up in the words of the user the reasons for the popularity and fast selling qualities of Utility Pedals for Fords.

They transform small smooth Ford clutch and brake pedals into standard size, comfortable pedals. Heavy rubber pad and side flange prevent slippage. Instantly attached. No holes to drill. Made of pressed steel, black enamel finish. Price, per set, \$1.25.



UNIVERSAL WRENCH SET

Will fit automatically any nut of any size or shape. No screws to manipulate or parts to get out of order. All the advantages of expensive 16-piece socket wrench sets. Price, only \$3.50.

UTILITY

UNIVERSAL RIM WRENCH



Fits every nut on every demountable rim. Absolutely automatic in action. All steel with indestructible handles and jaws even in the face of rough usage. Carries in any tool box. Finished in black enamel and nickel. Packed in fibre board cartons of 10. Price, \$1.75.

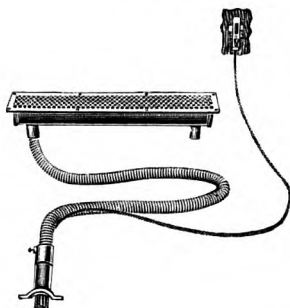
And the Famous

UTILITY PROTECTED HEATERS

Two Styles



A Model for Every Car



Note that Utility Heaters are made both Foot-Rail and Register types.

The medium size fittings are practically universal, in that they fit exhaust pipes on about 98% of cars in use.

Foot-Rail Type Prices

Utility Protected Heater, 27" long.....	\$20.00
Utility Front Seat Heater, 17" long, for front seats, coupes and small cars....	12.50
Utility Jr., for Fords.....	9.00
Utility De Luxe for 8-cylinder cars, 27" long	25.00

Register Type Prices

Utility Register Type Heater, 27" long.....	\$30.00
Utility Jr., Register Type, 17" long, for coupes, Fords, tonneaus, of other light cars and front seats of large cars	22.50
Utility Jr., Special for Buicks.....	25.00

Manufacturers

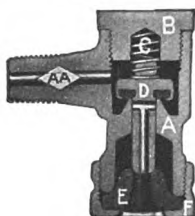
HILL PUMP VALVE CO. Belmont and Knox Aves., CHICAGO

Sales Department

THE ZINKE CO., 1323 Michigan Ave., Chicago

THE ZINKE COMPANY

ROMORT AIR APPLIANCES

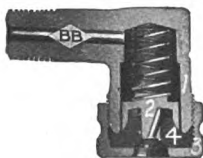


**Auto-
matic
Air
Valves**

Style "AA." This is a heavy duty automatic air valve especially designed for use with the Romort Universal Hose Coupling shown on this page. It has $\frac{1}{4}$ -inch I. P. threaded stem. Price, each, ...\$3.00



Style "A." For heavy duty the styles "A" and "AA" are recommended. Style "A" is furnished with step-up type stem which accommodates $\frac{1}{4}$ -inch, $\frac{3}{8}$ -inch or $\frac{1}{2}$ -inch inside diameter hose. Special stems can be furnished to fit any style metallic hose. Price, each\$3.00

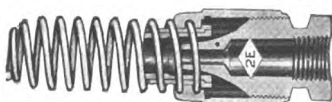


**Auto-
matic
Air
Valves**

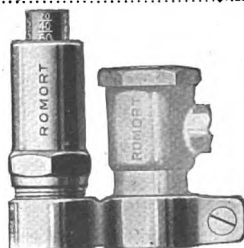
Style "BB." A light and inexpensive automatic air valve, equipped with $\frac{1}{4}$ -inch I. P. thread. Particularly designed for use with Romort Universal Hose Coupling. Price, each\$1.25



Style "B." Similar to the Style "BB" valve, excepting that it has the "step-up" type stem, accommodating $\frac{1}{4}$ -inch, $\frac{3}{8}$ -inch or $\frac{1}{2}$ -inch inside diameter tubing. Price, each\$1.25



Universal Hose Coupling. For use with threaded stem automatic air valves, also for connecting air hose to tanks. Has $\frac{1}{4}$ -inch I. P. thread. May be used with either rubber or metal covered hose, up to $\frac{3}{4}$ -inch, inclusive. Price, each\$1.25



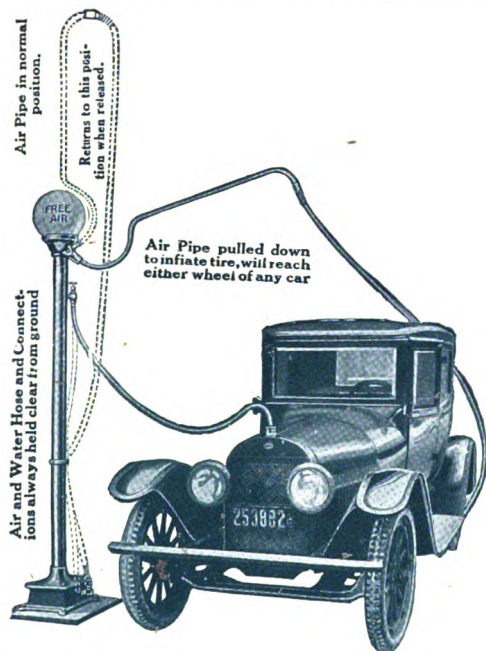
Tire Tester Attachment. Combines tire tester with Romort Automatic Air Valves. Simply slip gauge manufactured by A. Schrader's Son, Inc., into attachment. Price, each\$1.50

Complete Catalog of Romort Appliances, Sent on Request

Manufacturers
Romort Manufacturing Company **Oakfield and Chicago**
Exclusive Sales
The Zinke Company, 1323 Michigan Ave., Chicago

THE ZINKE COMPANY

ROMORT AIR & WATER STATION



Combines effective advertising and ornamental lamp post with air and water service.

Hinged air pipe always stands in vertical position when not in use, holding hose and valve connection clear of the ground. The reach of the hose is sufficient to supply air to either tire without moving the car. The return of the arm through which the air hose passes is gradual, being controlled by an oil piston, preventing damage caused by quick return. Flexible wire armor on hinged air pipe and automatic air valve prevents kinks, breaks or short bends in hose.

Made for use with the customary air compressor service.

No joints to leak as there is one continuous length of hose from valve to base of air station.

Electric light in globe at the top.

Price, Model 11 (air only) \$75.00

" Model 12 (air and water) 80.00

Manufacturers

Romort Manufacturing Company

Oakfield and Chicago

Exclusive Sales

The Zinke Company, 1323 Michigan Ave., Chicago



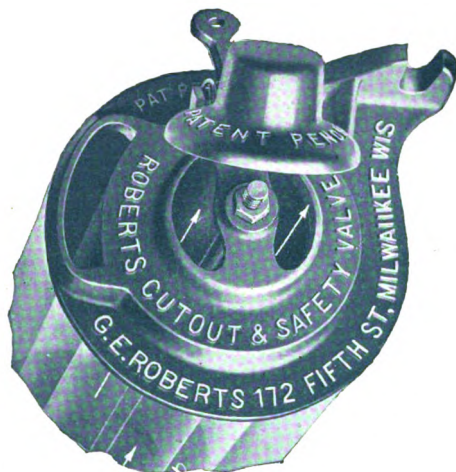
A distinctly individual type of radiator for the Ford car.

Spirex spirals are the principle of the patented construction, making for greater cooling capacity than can be obtained by the use of any other radiator. Forty-two per cent greater cooling capacity guaranteed.

The flexible metal used in its construction reduces the possibility of breakage as a result of freezing, to a minimum.

Manufactured by MODINE MFG. COMPANY, Racine, Wis.
THE ZINKE COMPANY, Sales Department

THE ZINKE COMPANY



ROBERTS

CUT-OUT and SAFETY VALVE

THE Roberts Cut-Out and Safety Valve combines the utility of an efficient cut-out with a safety valve of positive operation. It allows the burnt gases free and unobstructed passage from the cylinders and prevents them from mixing with the fresh charge.

When the cut-out is open, the exhaust or the dust it stirs up cannot get into the car because it is ejected straight out at the rear end of the muffler.

A GUARANTEE AGAINST BURSTED MUFFLERS

The spring-controlled safety valve opens instantaneously when there is abnormal back pressure or muffler explosions due to faulty ignition or carburetor troubles.

The Roberts Cut-Out and Safety Valve can be quickly installed and replaces the standard exhaust end of the Ford muffler. There is nothing to get out of order, loosen or rattle. Complete with hand control and cable, \$4.00. Packed in attractive, two color cartons in standard packages of twenty each.

The Roberts Cut-Out and Safety Valve is a genuine sales opportunity for dealers and jobbers. Write for our proposition.

Manufactured by
G. E. ROBERTS
172 Fifth St.
Milwaukee, Wis.

Exclusive Sales
THE ZINKE COMPANY
1323 Michigan Ave.
Chicago, Ill.

THE ZINKE COMPANY

FORC-FUL LUBRICATOR

For Ford Cars



Forc-Ful Lubrication Saves FORD Cars

The life of the Ford Car is 90% dependent upon effective lubrication.

The Forc-Ful Lubricator forces clean grease in and thru every part of a Ford Car designed for hard grease lubrication, including the Front Wheels, King Bolts, Tie Rod Bolts, Fan Bearing, Steering Post, Universal, Universal Sleeve Bearing, Rear Axle Bearing and Differential and does it in less time than is often required to properly lubricate any one of these bearings by the messy, clumsy, dirty, inefficient, old-fashioned grease cup method.

The Forc-Ful Lubricator is not merely a grease gun.

It is a powerful screw plunger lubricator and special permanent connections for all parts named.

It pays for itself in time and labor saved and many times in increased life and efficiency of the car.

Made by
I. C. MFG. CO.
Chicago, Illinois

Sales Dept.
THE ZINKE CO.
1323 Michigan Ave., Chicago, Ill.

**Sells on Sight**

Pee Gee

**AUTO PAINTING
OUTFIT**

Contains everything for painting a Ford or any similar size car, including Top

1 Qt. Pee Gee Auto Flat Black 1/4 doz. Sheets No. 1 Sand Paper
 1 Qt. Pee Gee Auto Gloss Black 1/4 doz. Sheets No. 00 Sand Paper
 1 Pl. Pee Gee Auto Top Dressing 1 2" All-Chinese Bristle Varnish Brush

*Write today for Dealers' Proposition***PEASLEE-GAULBERT CO., Inc.**

Established 1867

Louisville, Ky.

THE AMERICAN PRODUCTION MACHINE WORKS

Manufacturers of

THE AMERICAN DUPLEX GRINDER HEAD

THIS tool is applicable to any standard external grinder, and is guaranteed to increase production from 50% to 90% in the grinding of piston pins, tappets, spring and shackle bolts, transmission shafts—in fact any small straight or shouldered parts.

Design is perfect—machine easy to operate—big production—beats Centerless Grinding—liberal guarantee.

*Send for Technical Bulletin***THE AMERICAN PRODUCTION MACHINE WORKS**

General Offices—965 Woodward Ave.

DETROIT, MICHIGAN



Sold Under
Guaranty

Wilmo Manifold**GUARANTEE**

The WILMO MANIFOLD will positively increase per gallon mileage on any car for which it is designed, provided only that it is installed according to the directions furnished. If it fails to do so your money will be refunded.

Below are the present stock sizes now ready for delivery. Manifolds for other makes of cars will be added from time to time.

FORD MODEL T
 MAXWELL 23—1916-17
 BUICK 4-34-35
 OVERLAND 59-69-79
 OVERLAND 81-83

STUDEBAKER 17-18-4
 SAXON 6—1916
 OAKLAND 6-32—1916-17
 BUICK 6-D44-45
 STUDEBAKER 17-18-6

Completely vaporizes gasoline of whatever grade, reduces carbon, makes a smoother running car at all speeds, gives increased horsepower, all at an initial cost of only \$9.50 (Ford size) and up. Write for our attractive sales proposition.

THE WHITTIER COMPANY

CHICAGO

2415 SO. MICHIGAN AVE.

ILLINOIS

FLY - WHEELS**We Have the Capacity****Both FOUNDRY and MACHINING****COMPLETE FLYWHEELS ACCORD-
ING TO YOUR SPECIFICATIONS***Send us your Drawings. It will pay you***NIAGARA MOTORS CORP.**

-

Dunkirk, N. Y.

Please mention The Automobile Trade Directory

PANELS, Wood (Continued)

Michigan Veneer Co., 11th St., Alpena, Mich.
 Nevasplit—See Keyes Products Co.
 New Jersey Veneer Co., 258 W. Railway Ave.,
 Paterson, N. J.
 Roddis Lumber & Veneer Co., Marshfield, Wis.
 United States Plywood Co., 3 W. 14th St.,
 New York, N. Y. "Casco."

**PANELS and SWITCHBOARDS,
Charging**

Allen-Bradley Co., 284 Greenfield Ave., Milwaukee, Wis.
 Andrus & Sons Co., Julius, 362 Broadway, Milwaukee, Wis.
 Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.
 Cutter Co., Geo., Notre Dame & Division Sts., South Bend, Ind.
 Electric Products Co., Cleveland, O.
 (See page 875.)
 Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.)
 (See pages 819 to 822.)
 F-B Electric & Mfg. Co.—See Fairbanks Co.
 Friday Machinery & Supply Co., 20 Main St., Sigourney, Ia.
 General Electric Co., Schenectady, N. Y.
 (See page 779.)
 Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.
 Holt Farm Light Co., Ludington, Mich.
 Leonard Electric Co., Ward, Mt. Vernon, N. Y.
 R. & N.—See Randall & Noll.
 Randall & Noll, 317 S. 11th St., Lincoln, Nebr.
 "R. & N."
 Valley Electric Co., 2157 S. Kingshighway, St. Louis, Mo. (See page 375.)

PANS, Drip

(For placing under cars in garages or sales rooms to catch any oil or grease that may drip)

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.
 Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
 Boyle Mfg. Co., Los Angeles, Cal.
 (See page 189.)
 Briskin Mfg. Co., 315 S. Hoyne Ave., Chicago, Ill.
 Central Service Corp., 1807 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
 Cornwall Mfg. Co., Cleveland, O.
 (See page 937.)
 Cullen-Atkinson Co., 120 Allyn St., Hartford, Conn. "Hartford."
 Dover Stamping & Mfg. Co., 885 Putnam Ave., Cambridge, Mass. (See page 421.)
 Durlach Can & Iron Works, 284 Bridge St., Brooklyn, N. Y.
 Evans Mfg. Co., First Ave. & 31st St., Moline, Ill.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Hartford—See Cullen-Atkinson Co.
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D., Cincinnati, O.
 "Lawco." (See page 125.)

Maryland Metal Products Co., Hagerstown, Md.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.
 Sexton Can Co., 123 Broad St., Boston, Mass.
 Smyth Garage Pan Mfg. Co., Patchogue, N. Y.
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)
 Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.

PANS, Dust

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich.
 "Maco."
 Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
 Brummeler-Ruggles Metal Products Co., 1115 Ionia Ave., S. W., Grand Rapids, Mich.
 Brummeler's Sons Co., Wm., 415 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."
 Brusco—See Brummeler's Sons Co.
 Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 635.)
 Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
 Columbus Auto Brass Co., Columbus, O.
 (See page 477.)
 Cornwall Mfg. Co., Cleveland, O.
 (See page 937.)
 Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
 Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis.
 (See page 935.)
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Maco—See Automotive Sheet Metal Co.
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
 Mitchell & Son., G. F., 6501 Cedar Ave., Cleveland, O.
 Moline Pressed Steel Co., Fifth St., East Moline, Ill.
 Morrison & Sons, F., 1330 W. 11th St., Cleveland, O. (See page 937.)
 Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Mullins Body Corp., 182 Franklin Ave., Salem, O.
 Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
 Powell Pressed Steel Co., Hubbard, O.
 (See page 893.)
 Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
 Sheet Steel Products Co., Bryan, O.
 Universal Metal Parts Mfg. Co., 602-04 W. 53d St., New York, N. Y.
 York Corrugating Co., York, Pa.
 (See page 931.)

PANS, FLOOR—See Pans, Drip

Everything is listed under the NOUN or principal word

GRAY-HEATH CO

Sturdy REPLACEMENT COILS



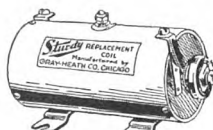
TYPE R 214



TYPE D 200



TYPE C 216



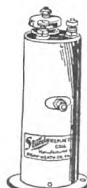
TYPE D 211



TYPE R 218



TYPE C 204



TYPE A 201



TYPE A 400

Sturdy Replacement Coils have no superior. They are designed to replace burned out coils used on all standard cars today. Every Coil is carefully tested before it leaves our plant and is guaranteed to give satisfaction.

We will replace, at any time, any Coil found to be defective in material or workmanship.

Manufactured by
GRAY-HEATH COMPANY
 1440 S. Michigan Ave.

CHICAGO

ILLINOIS

PANS, Radiator Splash, for Fords

(Sheet metal guard or pan for front of car to prevent splashing of mud on radiator or lamps)

Gahm-McCormick Co., 808 E. Main St., Streator, Ill. (See page 249.)
 Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.
 Masco—See Mayer Auto Accessories Corp.
 Mayer Auto Accessories Corp., 452-54 Ellicott Sq., Buffalo, N. Y. "Masco."
 Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
 Steel Products Co., Rice Lake, Wis.

PANS, SOD—See Pans, Dust**PAPER, Emery and Sand**

American Glue Co., 151 Beverly St., Boston, Mass. "Union," "New England," "Boston."
 Baeder, Adamson & Co., Richmond St. & Allegheny Ave., Philadelphia, Pa. "Old Reliable."
 Barton & Son Co., H. H., 108 S. Third St., Philadelphia, Pa.
 Behr & Co., Herman, 61 Broadway, New York, N. Y. "Brooklyn."
 Boston—See American Glue Co.
 Brooklyn—See Behr & Co.
 Carborundum Co., Niagara Falls, N. Y.
 Carbalox—See United States Sand Paper Co.
 Crystal Bay—See Minnesota Mining & Mfg. Co.
 Durite—See Manning Abrasive Co.
 Hurculundum—See United States Sand Paper Co.
 Manning Abrasive Co., 68 George St., Troy, N. Y. "Metalite," "Durite."
 Metalite—See Manning Abrasive Co.
 Minnesota Mining & Mfg. Co., 564 W. Monroe St., Chicago, Ill. "Crystal Bay," "Three-M-ite."
 New England—See American Glue Co.
 Old Reliable—See Baeder, Adamson & Co.
 Three-M-ite—See Minnesota Mining & Mfg. Co.
 Union—See American Glue Co.
 United States Sand Paper Co., 1560 Erie Ave., Williamsport, Pa. "Carbalox," "Herculundum."
 Wausau Abrasives Co., 118 S. Clinton St., Chicago, Ill. "Wausite."
 Wausite—See Wausau Abrasives Co.

PAPER, FRICTION—See Frictions, Fibre**PAPER, SAND—See Paper, Emery and Sand****PAPER SHIPPING COVERS—See Covers, Paper and Canvas Shipping****PAPER TAPES, AIRPLANE—See Tapes, Airplane Paper****PARABOLIC REFLECTORS FOR FORDS—See Reflectors, Headlight****PARACHUTES**

Irving Air-Chute Co., 523 Main St., Buffalo, N. Y.

Knabenshue Aircraft Corp., 140 W. 43d St., New York, N. Y.
 Smith Aerial Equipment Co., Floyd, 367 W. Adams St., Chicago, Ill.

PARKING LIGHTS—See Lights, Parking**PARTERS, CAM-SHAFT BEARING for Fords—See Tools, Cam-Shaft Bearing Parting****PARTS, Aircraft Wood**

(Bibs, Struts, Landing Gear, etc.)

American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.
 Grand Rapids Chair Co., 1661 Monroe Ave., Grand Rapids, Mich.
 Hamilton Aero Mfg. Co., Milwaukee, Wis.
 Hamilton Mfg. Co., Two Rivers, Wis.
 Huttig Sash & Door Co., 1206 S. Vandeventer Ave., St. Louis, Mo.
 Imperial Furniture Co., Grand Rapids, Mich.
 Lester Piano Co., 1306 Chestnut St., Philadelphia, Pa.
 Peck & Co., Hardman, New York, N. Y.
 Pigeon Hollow Spar Co., 181 Coleridge St., East Boston, Mass.
 West Woodworking Co., 308-24 N. Ada St., Chicago, Ill.

PARTS, BATTERY REPAIR—See Parts, Storage Battery Repair**PARTS, DISTRIBUTOR—See Parts, Magneto****PARTS, COIL—See Parts, Magneto****PARTS, Magneto, Coil and Distributor**

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.
 Asch and Co., Inc., 18-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Sturdy" Parts.) (See page 243.)
 Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 701.)
 Automotive Specialty Co., 311 W. 59th St., New York, N. Y. "Tasco."
 Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
 Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.
 Bee Cee—See Brown & Caine.
 Brown & Caine, 2317-21 Calumet Ave., Chicago, Ill. "Bee Cee." (See page 301.)
 Contact Metals Co., 221 E. 23rd St., Chicago, Ill.
 Eastern Parts Mfg. Co., 135 Spring St., New York, N. Y. "Pemko." (See page 365.)
 Gilliland Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 695.)
 Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y. (See page 169.)
 H. & L. Ignition Parts Mfg. Co., 300 W. Broadway, New York, N. Y.
 Hygrade Parts Co., 10 W. 62nd St., New York, N. Y.
 J. & B. Mfg. Co., Pittsfield, Mass. (See page 949.)

Everything is listed under the NOUN or principal word



REPLACEMENT

GUARANTEED

AXLES AND PINION SHAFTS

"Machined on Centers"

Each REPCO Shaft and Axle is finished to duplicate those furnished by auto manufacturers. Every one is tested to fit gears, and bearings of all standard cars. Each REPCO Axle is equal in quality and accuracy to the part it replaces.

Here are reproductions of representative Axle Shafts for twenty familiar and popular cars. Each is numbered to make the business of ordering a comparatively simple matter.



250—for Hudson Super Six



130—for Buick



310—for Maxwell



152—for Chalmers



312—Drive Shaft for Maxwell



160—for Chevrolet 490



350—for Overland 69, 79, 80, 81, 83



161—for Chevrolet "Baby Grand"



352—for Overland 75T, 75R, 90CC, 90R



164—Drive Shaft for Chevrolet 490



354—for Overland 90T



180—for Dodge



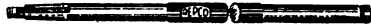
362—for Overland 82, 84, 86, 88-1, 88-6, 88-8



190—for Dorr



367—Propeller Shaft for Overland



210—for Ford



403—for Saxon 6Y-1919-1920



211—Drive Shaft for Ford



410—for Studebaker 1915-16-17-18



220—for Grant Six

JOBBER: REPCO Products are sold exclusively to legitimate jobbers. Shipped crated in standard units, packed 15 and 25 to the crate. We protect you.

Write for further information.

Manufacturers

REPLACEMENT PARTS CO.

KANSAS CITY

1012 Baltimore Ave.

MISSOURI

Please mention The Automobile Trade Directory

PARTS, Magneto, Coil and Distributor (Continued)

Millwood-Bracket Co., 1601 Locust St., Des Moines, Ia. (See page 189.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Niehoff & Co., Paul G., 323-43 E. Ohio St., Chicago, Ill. (See page 897.)
 Otter Mfg. Co., 243 W. 17th St., New York, N. Y.
 Pemko—See Eastern Parts Mfg. Co.
 Simek & Co., J. A., 19-21 Park Ave., New York, N. Y. (Distributors.) (See page 841.)
 Specialty Mfg. Co., Arlington, Mass. "Superior."
 Specialty Products Co., 494 Mulberry St., Newark, N. J.
 Standard Ignition Co., Owen Bldg., Detroit, Mich.
 Standard Motor Products Co., 43-45 E. 19th St., New York, N. Y.
 Sturdy—See Gray-Heath Co.
 Superior—See Specialty Mfg. Co.
 Tacso—See Automotive Specialty Co.
 Weldenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.

PARTS, Orphan Car Repair

(Covering Dealers to Repair Parts for Cars no longer manufactured)

Abbott Motor Car Co., Cleveland, O.
 Alco Service Co., 153-62 N. 22nd St., Philadelphia, Pa.
 American Motors Parts Co., Washington Ave. & Gelsendorf St., Indianapolis, Ind.
 Anchor Motor Car Co., St. Louis, Mo.
 Auto Gear Co., 1407 Hennepin Ave., Minneapolis, Minn.
 Auto Parts Co., 4114 Olive St., St. Louis, Mo.
 Auto Parts & Repair Co., 101 Liberty St., Springfield, Mass.
 Auto Salvage Co., 2323-25 Locust St., St. Louis, Mo.
 Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines, Ia.
 Automotive Gear Works, Atlanta, Ga. (See page 463.)
 Babel, L., 371 E. 29th St., Chicago, Ill.
 Belcher Engineering Co., 94 Broadway, Cambridge, Mass.
 Bergdoll Co., Louis J., Philadelphia, Pa.
 Berkshire Motor Co., Pittsfield, Mass.
 Boulevard Motor Co., Cambridge, Mass.
 Chadwick Engineering Works, Pottstown, Pa.
 Chandler, Ralph J., 536 E. Flower St., Los Angeles, Cal.
 Clark Motor Car Co., Shelbyville, Ind.
 Colter, A. W., Toledo, O.
 Columbia Auto Repair Co., 19 Buckingham St., Hartford, Conn.
 Columbus Buggy Parts Co., 400 Dublin Ave., Columbus, O.
 Connecticut Auto Parts Co., 533 Franklin Ave., Hartford, Conn.
 Corbin Motor Vehicle Co., New Britain, Conn.
 Council Bluffs Auto Parts Co., Council Bluffs, Ia.
 Cutting Co., Robt. M., 2635 S. Wabash Ave., Chicago, Ill.
 Daniel-Akeley Auto Parts Co., 79-81 Galena Blvd., Aurora, Ill.
 DeKalb Wagon Co., DeKalb, Ill.
 DeTamble Motors Co., Anderson, Ind.
 Empire Automobile Co., Indianapolis, Ind.
 Enger Motor Car Co., Indianapolis, Ind.
 Erbes Motor Car Co., L. C., 2654 W. University Ave., St. Paul, Minn.
 Filer & Stowell, Milwaukee, Wis.
 Fort Dodge Auto Wrecking Co., 507 First Ave., Fort Dodge, Ia.
 Frank Co., Paul A., 2349 Michigan Ave., Chicago, Ill.
 Fulton & Gibson, David City, Neb.
 Gaeth Motor Co., 2101-17 Abbey Ave., Cleveland, O.
 Goldberg, H., 1420 S. Eighth St., Philadelphia, Pa.
 Gorey Automotive Parts Co., 354 W. 50th St., New York, N. Y.
 Great Western Automobile Co., Kalamazoo, Mich.
 Gustin Automobile Co., 13-20 E. Mitchell Ave., Cincinnati, Ohio.
 Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (See page 175.)
 Haas Electric & Mfg. Co., R., 305-07 E. Monroe St., Springfield, Ill.
 Haberer & Co., Cincinnati, Ohio.
 Hal Motor Car Co., Cleveland, Ohio.
 Hartford Motor Car Co., 410 Main St., Hartford, Conn.
 Hassler Motor Car Co., Indianapolis, Ind.
 Henderson Motor Car Co., 1715 Catherine St., Detroit, Mich.
 Herreshoff Motor Co., Indianapolis, Ind.
 Hersch Auto Sales & Parts Co., 1970-78 E. 55th St., Cleveland, O.
 Huron Motor Car Co., Dearborn, Mich.
 Indiana Auto Parts & Tire Co., 318 N. Illinois St., Indianapolis, Ind.
 Johnson Service Co., Milwaukee, Wis.
 K. C. Auto Parts Co., 1837 McGee St., Kansas City, Mo.
 Kany, A. S., 633 Homewood Ave., Dayton, O.
 Keith Bros., Elkhart, Ind.
 Kelsey Motor Co., Hartford, Conn.
 Krit Motor Car Co., 1715 Catherine St., Detroit, Mich.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 125.)
 Levene Motor Co., 2200 Diamond St., Philadelphia, Pa. (See page 475.)
 Levengood, A. J., 153 N. Fourth St., Reading, Pa.
 Lion Motor Parts Co., Philadelphia, Pa.
 Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis, Ind.
 Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.
 Loper, G. E. Port Jefferson, N. Y.
 Lozier Motor Co., Detroit, Mich.
 Marion Motor Service Co., 430 N. Capitol Ave., Indianapolis, Ind.
 Mason Motor Car Co., 1715 Catherine St., Detroit, Mich.
 Matheson Co., Frank F., 694 Wyoming Ave., Wilkes-Barre, Pa.
 Maxwell Bros. Auto Salvage Co., St. Louis, Mo.
 Meteor Motor Car Co., Shelbyville, Ind.
 Michigan Motor Car Parts Co., Kalamazoo, Mich.
 Motor Corp., rear 1309 Race St., Philadelphia, Pa.
 Muskegon Auto Co., 14-16 W. Clay Ave., Muskegon, Mich.
 Mutual Motors Co., 500 Schenck St., North Tonawanda, N. Y.
 Niagara Motors Corp., Dunkirk, N. Y. (See page 693.)
 Northway Auto Parts & Sales Co., 223 Kearney St., Cincinnati, O.
 Pacific Motor Car Exchange Co., 221 W. 53d St., New York, N. Y.
 Pathfinder Co., Indianapolis, Ind.
 Petrie & Morgenthall, Greenacres, Pa.

Everything is listed under the NOUN or principal word

Misener Rotary Hack Saw



Fills a long-felt want in factory, garage and repair shop. Cuts round holes in Metal, Wood, Slate, Marble, etc. Cuts holes from 1" to 3 1/4" in diameter and from 1/4" to 1 1/4" deep. Just the thing for installing speedometers, ammeters, etc. The price is so low that the MISENER ROTARY HACK SAW pays for itself on the first job.

DEALERS: The MISENER ROTARY HACK SAW sells on sight. Full particulars and discounts to the trade on request.

BARNES & IRVING, Inc

Sole Distributors

Syracuse

New York

STOUT'S ADJUSTABLE STEERING WHEEL

Patented



Every Ford Car owner in your town a prospect.

The 17-inch adjustable steering wheel gives the Ford a driving comfort heretofore only found in high-priced cars.

All discomfort is eliminated when the "Adjustable" Wheel

is used. There is no squeezing, twisting or sliding into the seat, for by a single motion on the locking button the wheel is pushed up and to one side, as shown in the illustration.

The rims are of selected stock, highly polished and finished, corrugated or plain. The spider is cast from aluminum in a channel or U-mold, thereby insuring rigidity and stability.

The price is right, discounts liberal, deliveries prompt. Write for our proposition today.

STOUT'S MANUFACTURING COMPANY, Inc.

Lockport, New York

REPAIR PARTS FOR ORPHAN CARS ALL PARTS NEW

Your Inquiries Solicited

Partial List of Cars Supplied

Abbott	Little
Aloe	Lazier
Altier	Marathon
American	Marion
Argo	Marion-Handley
Argo-Electric	Marquette
Berliet	Mason
Borland	Matheson
Briggs-Detroit	Michigan
Broo Electric	Monarch
Cameroon	Northern
Car-Nation	Owen
Carters	Palmer-Singer
Chevrolet Model "C"	Pathfinder
Chevrolet Model "L"	Pontiac-Chassis
Crescent	Princeton
Cutting	Pullman
Detroit	Quess
Elgin Tractor	Rainier
Elmore	Regal
Emerson	Reliable-Dayton
E. M. F.	Ross
Everett	Scraps-Booth Cycle Car
F. A. L.	Speedwell
Fisher	Standard Detroit Tractor
Flanders	Stoddard-Dayton
Grabowsky	Sun
Havers	Trumbull
Henderson	Twenty
Hersheff	Warren
Hoff-Brooks	Wayne
Imperial	Welch-Detroit
Keston	Welch-Pontiac
Krit	Whiting
Lion	Yale Light

A. B. C. Starter Co., American Ball Bearing Axle Co., Deace Electric Co., Weston-Mott Axle Co.

HESS AXLES

ALL PARTS FOR ALL CARS ELECTRICAL REPAIRS

All Makes

Starters, Generators, Magnets, Coils and Ignition

SEND IT TO THE PURITAN

PURITAN MACHINE CO.

75 PURITAN BLDG.

DETROIT

MICHIGAN

Eastern Branch:

245 West 85th Street

New York City

Please mention The Automobile Trade Directory

PARTS, Orphan Car Repair (Continued)

Philadelphia Machine Works, 61-67 Laurel St., Philadelphia, Pa.
 Pierce Motor Co., Racine, Wis.
 Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
 Pullman Motor Car Co., York, Pa.
 Pungs-Finch Auto & Gas Engine Co., Detroit, Mich.
 Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 699.)
 Queen City Auto Parts Co., 533 Main St., Cincinnati, Ohio.
 R. C. H. Corp., Detroit, Mich.
 Randolph Motor Truck Co., Flint, Mich.
 Red Arrow Auto Co., E. River St., Orange, Mass.
 Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. (See page 697.)
 Republic Motor Car Co., Youngstown, Ohio.
 Riverside Machinery Depot, 251 St. Aubin Ave., Detroit, Mich.
 Rosenfeld, J., 521 Sixth St., So., Boston, Mass.
 St. Louis Car Co., 8000 N. Broadway, St. Louis, Mo.
 Sattler's Machine Shops & Works, 1601 Spring Garden St., Philadelphia, Pa.
 Smith, G. B., 228 Halsey St., Newark, N. J.
 Standard Motor Parts Co., Newcastle, Ind.
 Steele Co., W. M., 98-100 Beacon St., Worcester, Mass.
 Stehle, R. W., 1523 Brandywine St., Philadelphia, Pa.
 Stevens-Duryea Co., Chicopee Falls, Mass.
 Toepfer's Sons, Frank, 45 National Ave., Milwaukee, Wis.
 United Auto Parts Co., Omaha, Neb.
 Walk Hill Garage, 726 Walk Hill St., Mattapan, Mass.
 Walker & Barkman Mfg. Co., 408 Main St., Hartford, Conn.
 Walker & Barkman Mfg. Co., Hartford, Conn.
 Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 701.)
 Wichita Auto Wrecking Co., 807 West Douglas Ave., Wichita, Kans.
 Wilcox Co., 172 Griswold St., Detroit, Mich. (See page 207.)
 Wolf Auto Parts & Tire Co., I., 619 N. Illinois St., Indianapolis, Ind.
 Wyckoff Auto Salvage Co., Sioux City, Iowa.
 York Motor Car Co., 127 S. Duke St., York, Pa.
 Zimmerman Mfg. Co., Auburn, Ind.

PARTS, Repair, for Fords

(Covering Dealers in Repair Parts for Ford Cars who advertise in this Publication)

Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 900.)
 Dunham Co., Thos., Aurora, Ill. (See page 163.)
 Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (See page 251.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 701.)
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)

PARTS, Speedometer Repair

General Speedometer Repair Co., Inc., 119-21 West 63rd St., New York, N. Y. (See page 871.)
 Ogden Mfg. Co., Plymouth, Ind.
 Saco—See Speedometer Accessories.
 Speedometer Accessories, Plymouth, Ind. "Saco."

PARTS, Storage Battery Repair

American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O. (See page 295.)
 Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 101.)
 Automotive Craftsman, 1428 S. Wabash Ave., Chicago, Ill.
 Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 701.)
 Banner Battery Co., 1219 S. Wabash Ave., Chicago, Ill.
 Big Four Battery Co., Calumet & Gostlin Sts., Hammond, Ind. (See page 915.)
 Campbell Electric Co., 1529 Wyandotte St., Kansas City, Mo.
 Champion Storage Battery Corp., 193 Church St., Poughkeepsie, N. Y.
 Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.
 General Storage Battery Co., 2005 Locust St., St. Louis, Mo.
 McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
 Magneto Parts Co., 400 W. 23d St., New York, N. Y.
 Price Storage Battery Co., W. F., 1613 N. Broad St., Philadelphia, Pa.
 R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.
 Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.
 Service Station Supply Co., Wilkinsburg Station, Pittsburgh, Pa. (See page 349.)
 Smith Co., Harrison, Oklahoma City, Okla.
 Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 295.)
 Victory Storage Battery Co., 122-24 S. Sixth St., Louisville, Ky.

PARTS, Wood Automobile Body

Builders' Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 141.)
 Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
 Hanson-Ward Veneer Co., Bay City, Mich.
 Mengel Co., Louisville, Ky.
 Michigan Truck & Lumber Co., Holly, Mich.
 Pfau Mfg. Co., Cincinnati, O.
 Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.

PASTE, HAND—See Soaps, Hand

PASTE, POLISHING—See Polishes, Metal

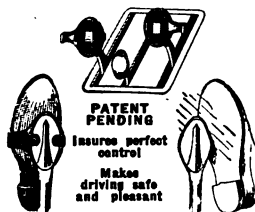
PASTE, SOLDERING—See Flux, Soldering

PASTE, Trimmers

Buckeye Paste Co., 270 S. Wall St., Columbus, O.

Everything is listed under the NOUN or principal word

PARTS FOR ANY CAR

WARSHAWSKY & CO., Inc.**AUTOMOBILE PARTS AND SUPPLIES
AUTO TIRES AND TUBES A SPECIALTY****Largest Car Wreckers in the World—We Pay Cash for Junk Cars****1915-31 S. State Street****CHICAGO****Safety Extension
Pedals For Fords****NEW-WAY
"SAFETY"**
Foot cannot
slip**PATENT
PENDING**Insures perfect
control
Makes
driving safe
and pleasant**OLD-WAY
"DANGER"**
Foot can
easily slip
and cause
accident*"The Quick
Selling
Accessory"*They Trans-
form the small
smooth road,
inefficient and
dangerous Ford
standard
clutch and
brake pedals
into safe and
comfortable
foot rests.They are
provided with
Safety Guards
on the sides,
which abso-
lutely prevents the feet from slipping in wet weather.
The heavy Rubber inserts eliminates vibration, in-
sures perfect control and makes driving safe and
pleasant under all circumstances.There is no side wear on the pedal causing the
foot to slide off.The rubber inserts can be replaced when worn out
at the small cost of ten cents each, making the Safety
Pedal a lifelong proposition.The Safety Extension Pedals are graceful in design
and substantially made. They are easily attached in
three minutes with an ordinary wrench and last a
lifetime.

Price \$1.25 a Pair

Racine Accessories Mfg. Co., Inc.**14th & Clark Sts. Racine, Wis.****OUR**Products have firmly estab-
lished for us a reputation in the
*Battery and Automotive Elec-
trical* field.We carry a most complete line
of parts and accessories for all
makes of storage batteries and
electrical systems.Complete equipment for bat-
tery and electrical service sta-
tions.Catalogue Describing Our Line Will Be
Sent Upon Request**AUTOMOTIVE ELECTRICAL SALES CO**2637 S. Michigan Avenue
CHICAGO, ILLINOIS**REPAIR PARTS FOR FORDS****We specialize on SPINDLE BODIES, SPINDLE ARMS,
SPRING HANGERS, PISTON PINS and HUB KEYS
Screw Machine Products up to 2 1/4 inches****Our facilities also enable us to furnish other parts.
Prices quoted upon application****PARK MANUFACTURING COMPANY****47 LAGRANGE ST.****WORCESTER, MASS.**

Please mention The Automobile Trade Directory

PATCHES, Tire Repair

(See also Shoes, Inner Tire; also Sleeves, Tire Repair)
 Acme—See Chicago Tire Goods Co.
 Acme—See Fraser-Petty Auto Accessories Co.
 Ajax Rubber Co., New York, N. Y.
 (See page 955.)
 All Ready—See Miller Rubber Co.
 Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.
 Amazon Rubber Co., Akron, O. "O'Neill."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Rub-R-Bak." "Vulkless."
 American Rubber & Tire Co., 100 Beech St., Akron, O. "Cling-Tite."
 Apache—See Phoenix Laboratories.
 Arlington—See Voorhees Rubber Mfg. Co.
 Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.
 Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."
 Auto-Joy—See Bart Mfg. Co.
 Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats All." (See page 363.)
 Auto Specialty Mfg. Co., 418 S. Barstow St., Eau Claire, Wis. "Stuck-Tite."
 Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."
 Bart Mfg. Co., 421 S. Fifth St., Minneapolis, Minn. "Auto-Joy."
 Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Sta-Tite."
 Beats-All—See Auto Specialties Mfg. Co.
 Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
 Black—See Sure-Tite Mfg. Co.
 Blaylock Tire & Rubber Co., G. E., 1811 N. Charles St., Baltimore, Md.
 Blue Ribbon—See International Metal Polish Co.
 Boggs Co., Kirk A., Fort Dodge, Ia. "Yankee Grip."
 Born Vulcanizing & Tire Agency, Main & Church Sts., Belleville, Ill.
 Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
 Boyd's Patch Co., 618 W. Grand Ave., Des Moines, Ia.
 Buckeye Re liner Producing Co., 653 N. Jackson St., Lima, O.
 Buffalo Bull—See Hoeffel & Co.
 Bull Dog—See Polson Rubber Co.
 Bull Dog—See Eastern Auto Specialty Co.
 Bull Dog Tire Patch Co., 626-28 E. Locust St., Des Moines, Ia.
 Bull Grip, 57-61 Eugenia St., Atlanta, Ga.
 Busy Bee Motor Car Co., 4451 Manchester Ave., St. Louis, Mo.
 Cactus—See Automotive Supply Mfg. Co.
 Caplan Bros., 77 Bedford St., Boston, Mass. "Tiger Grip."
 Carbo-Line Co., Hastings, Neb. "Defiance Never-Slip."
 Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."
 Cling-Tite—See American Rubber & Tire Co.
 Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."
 Cord-Wyckoff Tire & Rubber Co., 416 Douglas St., Sioux City, Ia.
 Cox, David H., 812 Chestnut St., Roselle, N. J.
 Cross—See General Tire & Rubber Co.
 Dan Patch Co., 329 Third St., La Salle, Ill.
 Dannenhirsch Co., 1906 W. Dauphin St., Philadelphia, Pa. "Danno."
 Danno—See Dannenhirsch Co.
 Defiance Never-Slip—See Carbo Line Co.
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."

Dickard-Marx Rubber Co., Monroe, La. "Styx."
 Doerner & Co., 4127 32d St., Cincinnati, O. "Sta-Tite."
 Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind.
 Dow Wire & Iron Works, Louisville, Ky. (See page 159.)
 Dur-a-bul—See Durham Mfg. Co.
 Durham Mfg. Co., 1518 Grand Ave., Kansas City, Mo. "Dur-a-bul."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Z Way—See Eastern Auto Specialty Co.
 Eagle Grip—See Mormiles Co.
 Eastern Auto Specialty Co., 926 Columbia St., Utica, N. Y. "Bull Dog." "E-Z Way."
 Eastern Rubber Co., Penna. Ave. & Brown St., Philadelphia, Pa. "Magic."
 Eckolastic—See Eckrode Rubber Co.
 Eckrode Rubber Co., 118-22 Adams St., Newark, N. J. "Eckolastic."
 Edelstone Fabric Co., Wm. W., 51 Char-don St., Cambridge, Mass. "Wedco." (See page 567.)
 Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Ia.
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "Peerless."
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Grip."
 Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.
 Ever-Grip Mfg. Co., 2106 Main St., Peoria, Ill.
 Everlasting Mfg. Co., 528 Pacific Bldg., San Francisco, Cal.
 Everloc—See Wood Co.
 Falls Rubber Co., Cuyahoga Falls, O.
 Farr's Sure-Hold Tire Cement Co., 114 Lawrence St., New York, N. Y. "Stays-Put."
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 Fleer-Petty Auto Accessories Co., 1421 Olive St., St. Louis, Mo. "Acme."
 4-A Products Co., 3105 Downing St., Denver, Colo. "Zip." (See page 861.)
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 General Tire & Rubber Co., E. Market St., Akron, O. "Major." "Cross."
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, Ohio. "M & M Stick Tite."
 Goodrich Co., B. F. S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O. (See page 943.)
 Gorilla—See McCandless & Son Mfg. Co.
 Grittite—See St. Louis Rubber Cement Co.
 Hadley Bros.-Uhl Co., 3948-52 W. Pine Blvd., St. Louis, Mo. "Okeah Speed-D."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Vulco-Visco." (See page 250.)
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Han-de-Pach—See Palmer Tire Co.
 Harigens Co., Erie, Pa. "Kant-Kum-Off."
 Hastee—See Johnson & Son.
 Henkins, A. C., Henry, Ill. "Shoogrip."
 Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.
 Hoeffel & Co., R., 61-69 Carroll St., Buffalo, N. Y. "Buffalo Bull."
 Hold-Fast—See Polson Rubber Co.
 Holdfast—See Diamond Holdfast Rubber Co.
 Horsey Products Co., 4915 Lexington Ave., Cleveland, O. (See page 1037.)
 Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.

Everything is listed under the NOUN or principal word



The only trade-marked tube patch. Made of pure white Para gum rubber. Fully proven and guaranteed.

A patch of highest quality. Will remain fresh for almost two years before use.



What Las-Stik Is.

LAS-STIK is the strongest tube patch made, having a breaking test record of 2600 lbs. and a heat test record of 250 degrees. Las-Stik is 3-64 in. thick, which is the same as the average inner tube, and weighs 4 pounds per square yard. Stretched to full capacity and nicked with a scissors in several places, this patch will not tear.

What Las-Stik Does.

Las-Stik repairs permanently any tube leak from the smallest puncture to a 17 in. blowout. When a tube having a Las-Stik Patch is inflated, the stretch and pull-back of the patch is about equal to the stretch

and pull-back of the tube itself. Thus the Las-Stik, Patch soon vulcanizes itself in and becomes an inseparable part of the tube, lying flat and smooth during the life of the tube.

Conveniently Carried and Easily Applied.

Las-Stik is made in three sizes and packed in round screw top containers conveniently carried in any tool kit or door pocket. Anyone can easily apply Las-Stik in a few moments, after which the tube is ready for immediate use. The cost to seal a small puncture forever is about one cent.

LAS-STIK PATCH MFG. CO., HAMILTON, O.

Export Office:
Las-Stik Patch Manufacturing Company
1227 Broadway, New York City

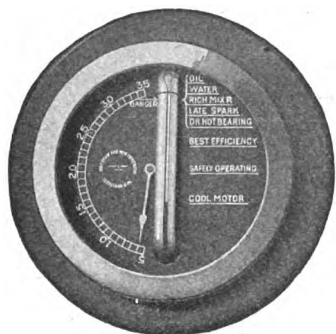
Please mention The Automobile Trade Directory

PATCHES, Tire Repair (Continued)

- Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
- Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
- International Metal Polish Co., Quill St. & Belt R.R., Indianapolis, Ind. "Blue Ribbon."
- Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
- Jacks & Campbell Co., 1822 McGee St., Kansas City, Mo.
- Jiffy—See Johnstown Rubber Co.
- Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Hastee."
- Johnstown Rubber Co., Johnstown, Pa. "Jiffy."
- Jumbo—See Super-Vulcanizer Mfg. Co.
- Kantkumoff—See Stearns Rubber Products Co.
- Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Leak-Nit."
- Las-Stik Patch Mfg. Co., Hamilton, O. (See page 703.)
- Leak-Nit—See Keystone Rubber Mfg. Co.
- Leak Proof Mfg. Co., Vincennes, Ind.
- Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
- Legnard Co., A. B., Waukegan, Ill.
- Locktite Patch Co., 7850 Marrow St., Detroit, Mich.
- Lockwood Mfg. Co., Kansas City, Mo. "Zip."
- Lox-It—See Superior Fabric Patch Co.
- M & M Stick Tite—See Giant Tire & Rubber Co.
- McCandless & Son Mfg. Co., A. C., 412 N. Market St., Wichita, Kans. "Gorilla."
- Magio—See Eastern Rubber Co.
- Magio Auto Devices Co., Lynbrook, N. Y.
- Major—See General Tire & Rubber Co.
- Malco—See Malouf Co.
- Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."
- Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
- Mengo Products Co., 557 Rosedale St. (Wilkinsburg), Pittsburgh, Pa. "Stictite."
- Michellin Tire Co., Milltown, N. J.
- Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
- Miller Rubber Co., Akron, O. "All Ready."
- Miller's—See Quick-Fix Tire Patch Co.
- Moco Co. of America, 18th & Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."
- Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.
- Monkey Grip—See Moco Co. of America.
- Mormiles Co., 416 Sherman St., Chicago, Ill. "Eagle Grip."
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
- Never-Creep—See United States Tire Co.
- Newark Rubber Co., Schley St., Garfield, N. J.
- Northwestern Chemical Co., 785 State St., Marietta, O. "Rubrback." (See page 277.)
- Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Vulca-Nite."
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- Okah Speed—See Hadley Bros.-Uhl Co.
- O'Neill—See Amazon Rubber Co.
- Palmer, Tire Co., Topeka, Kans. "Han-De-Fach."
- Pearless—See Eno Rubber Co.
- Pearless Mfg. Corp., 1522-24 St. Louis Ave., Kansas City, Mo. "Sta-tite."
- Pennsylvania Rubber Co. of America, Jeanette, Pa.
- Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.
- Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."
- Phoenix Laboratories, 704 Polk St., San Francisco, Cal. "Apache."
- Pioneer Rubber Products Co., Michigan Ave. & Kansas St., St. Louis, Mo.
- Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Bull Dog," "Hold-Fast."
- Porcupine—See Auto Boot Mfg. Co.
- Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
- Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
- Quick-Fix Tire Patch Co., 423 Good Bk., Des Moines, Ia. "Miller's."
- Quick-Tite Patch Co., 30 Market St., Amsterdam, N. Y.
- Racine Rubber Co., Asylum Ave., Racine, Wis.
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Red Line, Inc., Grand Rapids, Mich. (See page 607.)
- Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
- Rie-Nie—See Durkee-Atwood Co.
- Rubrback—See Northwestern Chemical Co.
- Red Cross—See National Rubber & Specialties Co.
- Rub-R-Bak—See American Automobile Accessories Co.
- Ryden Supply Co., 203 E. Lake St., Minneapolis, Minn. "Shurstik."
- S-V—See Williams Mfg. Co.
- St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "Griptite."
- Seal-Fast—See Bowes Co.
- Security—See Perry Auto Co.
- Shoorgrip—See Henkins, A. C.
- Soo-Grip—See Emen Mfg. Co.
- Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."
- Sta-tite—See Peerless Mfg. Corp.
- Sta-Tite—See Doerner & Co.
- Stays-Put—See Farr's Sure-Hold Tire Cement Co.
- Stearns Rubber Products Co., 179 W. Washington St., Chicago, Ill. "Kantkumoff."
- Stephens Rubber Co., A. J., 1426 Chestnut St., Kansas City, Mo.
- Stictite—See Mengo Products Co.
- Stitch-in-Time—See Wood Co.
- Stuck-Tite—See Auto Specialty Mfg. Co.
- Styxx—See Dickard-Marx Rubber Co.
- Super-Vulcanizer Mfg. Co., South West Temple, Salt Lake City, Utah. "Jumbo."
- Superior Fabric Patch Co., Midlothian, Tex. "Lox-It."
- Sure-Seal—See Van Cleef Bros.
- Sure-Stay—See Torkelson Mfg. Co.
- Sure-Tite Mfg. Co., Midlothian, Tex. "Black."
- Surestik—See Ryden Supply Co.
- Tiger Grip—See Caplan Bros.
- Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J.
- Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Sure-Stay."
- Triangle Rubber Co., Oklahoma City, Okla.
- Twentieth Century Tire Protector Co., Midlothian, Tex.

Everything is listed under the NOUN or principal word

THE CLIMAX MOTOR INDICATOR



A DEVICE

Indicating the Actual Temperature and Performance of the Lubricating System Upon Which Depends the Life and Proper Operation of a Gasoline Motor.

Combines in one instrument—a Pressure Gauge—an Oil Sight Feed—and a Motor Heat Indicator.

Eliminates Repair Bills due to running a car with insufficient lubrication because it keeps you in constant knowledge of the pressure, quantity and temperature of the circulating oil in your motor.

Installation is made on the dash, where it is always visible from the driver's seat.

Special types for Overlands, Buicks and other cars which can be easily installed.

Engineers of automotive plants are invited to investigate.

Our discounts are so arranged that the supply trade will find this a most profitable accessory.

CLIMAX MOTOR DEVICES
CHAGRIN FALLS, OHIO

PERMA-LOC PRODUCTS

Perma-Loc Patch

Fabric Backed or Rubber Backed

Priced right and stocked by most jobbers and dealers in the East.

Four Sizes

50c
\$1.00
1.50
6.00



Perma-Loc Dam-A-Leak

A liquid radiator cement. Saves the motorist time and money.

Retail 75c



High grade moulded and cured, all new fabric Blowout patch.

Perma-Loc Top Dressing

For dyeing and waterproofing automobile tops of every material. Retail 95c pint, \$1.85 qt., 1/2 gal. \$3.

Radiator Cement (Powder)	75c
Carbon Remover	60c
Rubber Putty Kit	\$1.00
Valve Grinding Compound, 4 oz. double end, coarse and fine	65c
One Pound cans, coarse or fine	35c
Mechanics special, fast cutting, 1 1/4 pounds net	\$1.00
Radiator Cleaner	\$1.50
Patching Cement	10c 15c 40c
Rim and Gasket Cement	20c 50c 85c
In quarts	\$1.50
In gallons	\$4.00

If your Jobber does not stock our goods you may order direct from us, giving Jobber's name.

Perma-Loc Manufacturing Co.
Wilkes-Barre, Penna.

Please mention The Automobile Trade Directory

PATCHES, Tire Repair (Continued)

United States Tire Co., 1790 Broadway, New York, N. Y. "Never-Creep."
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Sure-Seal."
 Vitalco—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Arlington."
 Vul-Tex Mfg. Co., 140 E. Lake St., Minneapolis, Minn.
 Vulca Laboratories, 143 Second St., San Francisco, Calif.
 Vulca-Nite—See Nu-Back Mfg. Co.
 Vulco—See Gates Rubber Co.
 Vulco-Visco—See Hall-Thompson Co.
 Vulkless—See American Automobile Accessories Co.
 Vulpa—See Spencer Co.
 Vultite Rubber Co., Bridgeport, Conn.
 Weldo Patch Mfg. Co., 160 Fifth Ave., New York, N. Y.
 White Mule, Inc., 211 S. Illinois Ave., Carbondale, Ill.
 Wedco—See Edelstone Fabric Co.
 Williams Mfg. Co., 1800 Carman St., Camden, N. J. "B-V."
 Wood Co., W. C., Sixth Ave. S. E. & University Ave., Minneapolis, Minn. "Everloc," "Stitch-in-Time."
 Yankee Grip—See Boggs Co.
 Zip—See Lockwood Mfg. Co.
 Zip—See 4-A Products Co.
 Zip Mfg. Co., (Rosedale) Kansas City, Mo.

PATCHES, Top Repair

(For repairing mohair or other fabric tops)

Auto Products Mfg. Co., Buffalo, N. Y. "Rub-R-Tite."
 Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 363.)
 Beats-All—See Auto Specialties Mfg. Co.
 Cementon—See Perkins-Campbell Co.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."
 Craft—See Wood-Craft Co.
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Perkins-Campbell Co., Cincinnati, O. "Cementon." (See page 115.)
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rub-R-Tite—See Auto Products Mfg. Co.
 Stik-Tite—See Cincinnati Auto Specialty Co.
 Whiz—See Hollingshead Co.
 Wood-Craft Co., 1486 Marshall Ave., St. Paul, Minn. "Craft."

PATCHING BUFFERS—See Buffers, Tube Patching**PATCHING CEMENT—See Cement, Tire Repair****PATTERN MAKERS**

Acme Pattern Works, Fourth & Porter Sts., Detroit, Mich. (See page 185.)
 Acme Pattern & Machine Co., 1553-59 Niagara St., Buffalo, N. Y.

Acme Steel & Malleable Iron Works, 245 Military Rd., Buffalo, N. Y.
 American Pattern Works Co., 1551 W. Market St., York, Pa.
 Banner Pattern Co., Columbus, O.
 Beatty Co., J. M., Imperial-Power Bldg., Pittsburgh, Pa.
 Bilt-Rite—See Keystone Pattern Works.
 Brighton Pattern Co., Beaver Falls, Pa.
 Bronx Pattern & Model Works, 147 E. 128th St., New York, N. Y.
 Buffalo Pattern Works, 880 Hirtel Ave., Buffalo, N. Y.
 Cameron & Kaulfers Co., 56 Marshall St., Elizabeth, N. J.
 Central Pattern Works, 1382 Market Ave., S. Canton, O.
 Central Service Corp., 1607 Merchant Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
 Chester Pattern Co., Chester, Pa.
 Cleveland Castings Pattern Co., 1930 E. 61st St., Cleveland, O.
 Cohoes Iron Foundry & Machine Co., 37 W. Rensselaer St., Cohoes, N. Y.
 Collamer Machine Works, 1214 E. 162d St., Cleveland, O.
 Des Moines Pattern & Model Works, 121 I Walnut St., Des Moines, Ia.
 Edam Pattern Co., G. A., 3123 Scranton Rd., Cleveland, O.
 Elizabeth Pattern Works, Fourth & Livingston Sts., Elizabeth, N. J.
 Emmert Mfg. Co., W. Main St., Waynesboro, Pa.
 Eppenbach, Wm., 221 Vernon Ave., Long Island City, N. Y.
 Forster Pattern Works, J. G., 148 S. Delaware St., Indianapolis, Ind.
 Griffin & Co., Henry C., 142-54 Varick St., New York, N. Y.
 Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.
 Hartford Pattern & Model Co., Hartford, Conn.
 Hawkeye Pattern Works, 707 W. Second St., Davenport, Ia.
 Hunter Co., Thomas J., 310-16 N. 11th St., Philadelphia, Pa.
 Jessup Pattern Works, Stephen C., 245-65 Roosevelt Ave., Salem, O.
 Jurack Pattern Works, Chas., 600 S. Pierce St., Milwaukee, Wis.
 Keystone Pattern Works, 1807 Jackson St., Omaha, Neb. "Bilt-Rite."
 Kunst Co., John, 48 Murray St., New York, N. Y.
 La Crosse Pattern Works, 907 S. Front St., La Crosse, Wis.
 Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.
 Locke Pattern Works, 217-21 Woodward Ave., Detroit, Mich.
 Louisville Pattern Works, 119 N. Fourth Ave., Louisville, Ky.
 Martini & Hunko Co. of America, 1201 Hudson St., Hoboken, N. J.
 Messenger, George T., 609 W. Cambria St., Philadelphia, Pa.
 Michigan Pattern & Machine Works, 2429-39 E. Jefferson Ave., Detroit, Mich.
 Milwaukee Pattern & Mfg. Co., 1195-99 30th St., Milwaukee, Wis.
 Modern Pattern & Machine Co., 451-53 Monroe St., Detroit, Mich.
 Mt. Penn Pattern Works, 318 Court St., Reading, Pa.

Everything is listed under the NOUN or principal word

PATTERN MAKERS (Continued)

Nobach Pattern Works, W. J., 411-13 S. Clinton St., Chicago, Ill.
 North Dayton Pattern Works, (N. Dayton), Dayton, O.
 Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.
 Peerless Pattern & Body Co., 1754 Main St., Buffalo, N. Y.
 Peerless Pattern Works, 405 E. Madison St., South Bend, Ind.
 Phillips, W. H., Exposition Bldg., Cambridge, Mass.
 Remmers Pattern Co., 919 Benton St., St. Louis, Mo.
 Reynolds & Currie, 141 Maple St., Waterbury, Conn.
 Ritter Pattern & Wood Working Co., 222 Canal St., New York, N. Y.
 Sandusky Pattern Co., King & Monroe Sts., Sandusky, O.
 Sharp Bros., 39 Cottage St., Bayonne, N. J.
 Silent Holst Co., 302-04 McDougal St., Brooklyn, N. Y.
 Smith & Co., E. M., Peoria, Ill.
 Sonith Pattern Works, 212-214 S. Pennsylvania St., Indianapolis, Ind.
 Standard Pattern Works, 688 E. Fort St., Detroit, Mich.
 Standard Pattern Works, 614 W. 12th St., Erie, Pa.
 Standard Pattern Works, York, Pa.
 Standard Pattern Works Co., 5387 St. Clair Ave., Cleveland, O.
 Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
 Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
 Turner, Ira B., Amber & Dauphin Sts., Philadelphia, Pa.
 Victor Tool Co., Waynesboro, Pa.
 Wallace & Co., John D., 1401-05 W. Jackson Blvd., Chicago, Ill.
 Western Pattern & Mfg. Co., 1218 Washington Ave., Racine, Wis.

PATTERNMAKERS' LATHES—See Lathes, Woodworking

PAY CHECKS—See Checks, Brass Time, Tool and Pay

PEDAL ENGINE STARTERS—See Starters, Manual

PEDAL EXTENSIONS—See Extensions, Pedal

PEDAL GRIPS—See Grips, Pedal

PEDAL LOCKS FOR FORDS—See Locks, Pedal

PEDAL PADS—See Grips, Pedal

PEDAL PLATES—See Plates, Heel, Pedal or Step

PEDAL SHIELDS FOR FORDS—See Deflectors, Heat

PEDAL STARTERS—See Starters, Manual

PEDAL STOPS—See Stops, Pedal for Fords

PEDALS, ACCELERATOR—See Pedals, Special Accelerator

PEDALS, ACCELERATOR, FOR FORDS—See Accelerators, Foot

PEDALS, CUT-OUT—See Pedals, Horn and Cut-Out

PEDALS, Horn and Cut-Out

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)

Au-To Compressor Co., Wilmington, O. "Oro." Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Brewer-Tichenor Corp., Cortland, N. Y. (See page 573.)

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island, N. Y.)

Cooper Mfg. Co.—See Fulton Co.

Cox Brass Mfg. Co., Albany, N. Y. (See page 171.)

Eberhard Mfg. Co., 3734 Tennyson Rd., Cleveland, O.

Emco Mfg. Co., Binghamton, N. Y. (See page 521.)

Ewald—See Zinke Co.

Fulton Co., Dept. S., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Ia.) (See page 1022.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

Gray-Hawley Mfg. Co., 2123-31 Jefferson Ave., E., Detroit, Mich.

Larimer Co., 62 N. La Salle St., Aurora, Ill.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Oro—See Au-To Compressor Co.

Petry Co., N. A., 1307 Race St., Philadelphia, Pa.

Piel Co.—See Cassidy Co.

Romort Mfg. Co.—See Zinke Co.

Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald.")

PEDALS, Motorcycle

Ramsdell Specialty Co., 667 W. Boylston St., Worcester, Mass.

Torrington Co., Torrington, Conn.

PEDALS, MUFFLER CUT-OUT—See Pedals, Horn and Cut-Out

PEDALS, RATCHET—See Pedals, Horn and Cut-Out

Everything is listed under the NOUN or principal word

PEDALS, Special Accelerator

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Hunt & Co., E. J., Equity Bldg., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
 Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Imperial-Wixon." (See page 177.)
 Imperial-Wixon—See Imperial Brass Mfg. Co.
 Mahr Specialty Co., 910 13th Ave., S. E., Minneapolis, Minn.
 Thomson Mfg. Co.—See Hunt & Co.

PENNANT HOLDERS—See Holders, Flag, Pennant and Emblem

PENNANTS AND FLAGS—See Flags, Pennants and Emblems

PERIODICALS—See Books and Periodicals.

PET COCK OPENERS FOR FORDS—See Wrenches, Oil Cock

PET COCKS—See Cocks

PHOSPHOR BRONZE WIRE—See Wire, Phosphor Bronze

PHOSPHORESCENT COMPOUNDS—See Paints, Luminous

PHOSPHORESCENT PAINTS—See Paints, Luminous

PICKING MACHINES—See Machines, Hair Picking

PICNIC TABLES—See Tables, Picnic and Lunch

PINIONS, FIBRE—See Gears and Pinions, Rawhide

PINIONS, METAL—See Gears and Pinions, Metal

PINIONS, RAWHIDE—See Gears and Pinions, Rawhide

PINIONS, SPEEDOMETER—See Gears and Pinions, Speedometer

PINS, Aircraft Clevis

Erie Specialty Co., Erie, Pa.

PINS, Cotter

American Chain Co., Bridgeport, Conn. "Campbell." (See page 543.)
 American Cotter Pin Co., Park Bldg., Pittsburgh, Pa. "Kelkotters."
 Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex.
 Brooks & Sons, M. S., Chester, Conn.
 Campbell—See American Chain Co.
 Cobb & Drew, Plymouth, Mass.
 Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments only.) (See page 669.)

Falls Rivet Co., Kent, O.
 Hindley Mfg. Co., John St., Valley Falls, R. I.
 Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 597.)

Kelkotters—See American Cotter Pin Co.

McWhorter Mfg. Co., Riverton, N. J.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Saco—See Smith & Co.

Smith & Co., F. P., Sharon Hills, Pa. "Saco."
 W W—See Western Wire Products Co.

Western Wire Products Co., 324-26 S. Third St., St. Louis, Mo. "W W."

Whitaker Mfg. Co., Chicago, Ill. (See page 1075.)

Wire Goods Co., 28 Union St., Worcester, Mass.

PINS, Crank Ratchet for Fords

Al-Fountainé Co., Millbury, Mass.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "Sta-Tite."

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Jifty."

Jifty—See American Auto Products Co.

Sta-Tite—See Allied Steel Products Co.

PINS, DRIFT—See Punches, Center, Prick and Drift

PINS, Escutcheon

American Steel & Wire Co., Chicago, Ill. (See page 819.)

Atlas Tack Corp., Fairhaven, Mass.

Blake & Johnson Co., Waterbury, Conn. (See page 833.)

Corbin Screw Corp., High St., New Britain, Conn.

Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 617.)

Star—See Turner & Seymour Mfg. Co.
 Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.

Turner & Seymour Mfg. Co., Lawton St., & R. R., Torrington, Conn. "Star."

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Wire Goods Co., 28 Union St., Worcester, Mass.

PINS, Piston

(See also Machine Work; also Screw Machine Products)

Allospar—See Alloy Parts Mfg. Co.

Alloy Parts Mfg. Co., Canton, Mass. "Allospar."

Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.

Ashley Machine Works, 724 University Ave., Rochester, N. Y.

Automotive Products Corp., Hazleton, Pa. (See page 709.)

B-N—See Burgess-Norton Mfg. Co.

Bard Mfg. Co., Royersford, Pa. (See page 709.)

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.

Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Cathcart Co., C. A., 161 Mass. Ave., Boston, Mass. (See page 1059.)

Everything is listed under the NOUN or principal word

"Super-Quality"

WRIST PIN SERVICE

A COMPLETE LINE

BY THE

AUTOMOTIVE PRODUCTS CORP., of Hazleton, Pa.

Spring Shackle Bolts

Valve Tappets

Particularly:—

**Hardened and Ground Parts
Nicety of Fit—Ease in Assembling**

BARD MFG. CO.

ROYERSFORD
PA.

Piston Pins

Bushings

ONE MAN TOPS

**Sockets, Frames and
Complete Tops
To fit the most unusual bodies**

DETROIT WEATHERPROOF DEMOUNTABLE TOPS

**For Hudson, Chalmers, Chevrolet and
Ford Cars always in stock.**

Tonneau Windshields

Sharrer Patent Top Co., Inc., 250 W. 54th St., New York City

TELEPHONE CIRCLE 1636



Light Weight
Without Rings and Pin

CAST IRON COCHRAN PISTONS DOW-METAL

**Dow-Metal Metallic Magnesium Pistons Are $\frac{1}{4}$
the Weight of Cast Iron**

Lighter Than Aluminum Alloys

No Scoring—No Abrasion to Cylinder Walls

Cast Iron — Light Weight — Return Oil Groove

Lubrication Band — Accurately Ground and Balanced

Most Makes—Fifteen Oversizes

**COCHRAN PISTON CORPORATION
DETROIT, MICHIGAN LOS ANGELES, CALIF.**

Please mention The Automobile Trade Directory

PINS, Piston (Continued)

Central Machine Works, 19 Church St., Worcester, Mass. (See page 611.)
 Club Auto Parts & Machine Co., 304-06 Chester St., Buffalo, N. Y.
 Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
 Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 463.)
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Dyer Co., G. H., 155 Brookline Ave., Cambridge, Mass.
 Fargo Motor Co., 1162-64 W. 22d St., Chicago, Ill. (See page 611.)
 Federal Parts Mfg. Co., 15 Second St., S. E. Minneapolis, Minn.
 Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 Gas Motor Parts Co., 53 Page St., San Francisco, Cal.
 Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 625.)
 Hyklas—See Parts Service Co.
 Landis & Sons, A. B., (Chestnut Hill) Philadelphia, Pa.
 Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
 Lincoln Machine Co., 1068 Main St., Pawtucket, R. I.
 Lyon Co., Edward F., 1800-34 E. Euclid Ave., Detroit, Mich.
 Machine Specialty Co.—See Patterson-Burrows Co.
 Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
 Millholland Machine Co., W. 33rd & Belt. R. R., Indianapolis, Ind.
 Monmouth Machine Co., Cleveland, O.
 Motor City Parts Co., 908 Philadelphia St. W., Detroit, Mich.
 National Steel Products Co., 2270 Franklin St., Detroit, Mich.
 Neupert Mfg. Co., 32 Lark St., Buffalo, N. Y.
 Newark Motor Products Mfg. Co., Newark, N. J.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J.
 Noonan Mfg. Co., D. R., Paris, Ill.
 Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 147.)
 Patterson-Burrows Co., 1807 Kresge Bldg., Detroit, Mich. (Sole Distributors for Machine Specialty Co., Ann Arbor, Mich.)
 Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
 Recording Devices Co., 554 W. Fifth St., Dayton, O.
 Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill.
 Singer Machine Works, Joe, 2116 S. Los Angeles St., Los Angeles, Cal.
 Spacke-Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Standard Automatic Tool Co., Racine, Wis.
 Standard Gear Co., 5980 Commonwealth Ave., Detroit, Mich.
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
 Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 811.)
 Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.
 U. S. Hammered Piston Ring Co., 1306 S. Grove St., Irvington, N. J.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)
 Universal Grinding Co., Hartford, Conn.

Vulcan Products Co., 350 Lafayette Blvd., Detroit, Mich.
 Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
 Wainwright Engineering Corp., Connerville, Ind. (See page 715.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 331.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)
 Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 715.)

PINS, Piston, for Fords

(Including both regular and special light weight pins)
 Acme Mfg. Co., Boonton, N. J.
 B-N—See Burgess-Norton Mfg. Co.
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Bu-Nite—See Butler Mfg. Co.
 Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
 Cincinnati Screw Co., Twilight, O. (See page 945.)
 Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
 Eckhouse & Co., Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Bemiller Foundry & Machine Co., Bellville, O. (See opposite Title Page.)
 Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 Hill-Smith Metal Goods Co., 83 Brookline Ave., Boston, Mass. (See page 533.)
 Motor City Parts Co., 908 Philadelphia St. W., Detroit, Mich.
 Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 701.)
 Wilcox Motor Mfg. Co., Saginaw, Mich. (See page 811.)

PINS, Taper

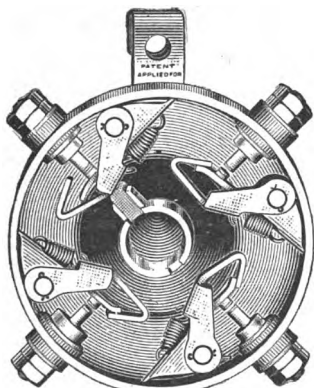
Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
 Cassidy-Fairbanks Mfg. Co., 6136 S. La Salle St., Chicago, Ill.
 Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 551 and 827.)
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (Assortments only.) (See page 699.)
 Ferry Cap & Set Screw Co., 251 Seranton Rd., Cleveland, O. (See page 825.)
 Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
 Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Sewing Machine Co., Belvidere, Ill.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 873.)
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Screw Machine Products Corp., 1013 Eddy St., Providence, R. I.
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 U. S. Automatic Co., Amherst, O.
 Western Automatic Machine Screw Co., Elyria, O.
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

Everything is listed under the NOUN or principal word

B. K. F.

HIGH EFFICIENCY PRODUCTS

THE B. K. F. MAKE AND BREAK TIMER for Ford Cars, Trucks and Fordson Tractors



Make and Break construction is used in all high-grade ignition apparatus. It eliminates misfiring caused by worn roller type timers and insures a fat, quick, positive spark at the right instant—saves the battery by cutting off the current as soon as contact is made.

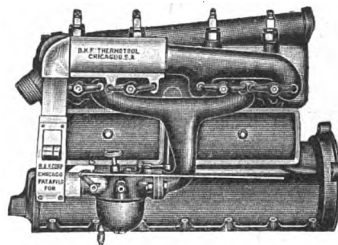
No oiling required—no pitting of contact points—no steel or fibre rollers to wear flat and cause trouble—nothing to get out of order or adjustment.

GUARANTEE

The B-K-F MAKE AND BREAK TIMER is guaranteed against defective workmanship and material and to work efficiently for the period of one year. Any timer failing to give satisfactory service should be returned to us for replacement. No alterations or adjustments in the timer will be sanctioned.

List Price **\$4.00**

THE B. K. F. THERMOTROL (Thermostatic Control) on any Ford Car or Truck



THERMOTROL is so designed that by using the proper amount of heat from the exhaust manifold, the thermostat absolutely controls the temperature at the gas forming point, and from this point, a true dry gas passes into the cylinders where every atom is exploded. The result is every ounce of power from your gasoline is obtained. This means greater flexibility and less vibration—and that

The THERMOTROL overcomes all possibility of gasoline in your crank case because no wet fuel ever gets to the cylinders to leak past rings and pistons. It saves oil and prevents burned bearings. Carbon is practically eliminated for the same reason.

The B-K-F THERMOTROL is easy to attach. The special Ford model is furnished with a solid aluminum hot air stove and a mechanically perfect, thermostatic air regulator. It will last as long as your motor. Once installed, your gasoline and carburetor worries are over.

List Price **\$10.00**

MANUFACTURERS

B. K. F. CORPORATION

CHICAGO

20 E. Jackson Boulevard

ILLINOIS

Please mention The Automobile Trade Directory

PISTONS, Finished and Machined (Continued)

R. & M. Malumium—See Modern Electric & Machine Co.
 Rapid Rim Co., Huntington, Ind.
 Ritefit—See Wright Mfg. Co.
 Rite-Wate—See American Engine & Airplane Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Very-Lite."
 Seymour Laboratoried Units, 3009 Lisbon Ave., Milwaukee, Wis.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Spencer-Smith Machine Co., Howell, Mich. (See page 715.)
 Standard Automatic Tool Co., Racine, Wis. "Staround."
 Staround—See Standard Automatic Tool Co.
 Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 623.)
 Tapco—See American Piston Co.
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
 Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 811.)
 Tsungani—See Alloys Motor Parts Mfg. Co.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)
 Verylite—See Wilkie's Garage & Machine Works.
 Very-Lite—See Saginaw Metal Parts Corp.
 Vita-Lite—See Ideal Bronze Co.
 Wadell Motor Corp., 661-71 Freylinhuysen Ave., Newark, N. J.
 Wainwright Engineering Corp., Connorsville, Ind. (See page 715.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 331.)
 Weems, M. K., Maine & 11th Sts., Quincy, Ill.
 Whitman Luvium Metal Mfg. Co., 6900 S. Broadway, St. Louis, Mo.
 Wilkie's Garage & Machine Works, 208 W. Third St., Winona, Minn. "Verylite."
 Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 715.)
 Wridgway Co., Hallstead, Pa. "Zephyr."
 Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn. "Ritefit."
 Zephyr—See Wridgway Co.

PISTONS, Special Light Weight, for Fords

(Including aluminum and aluminum alloy pistons)

Am-pe-Co—See American Machine Products Co.
 American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. "Rite-Wate."
 American Machine Products Co., Marshalltown, Iowa. "Am-pe-Co."
 American Piston & Machine Co., 502-08 Garfield Ave., Detroit, Mich. (See page 617.)
 Automotive Products Corp., Hazleton, Pa. (See page 709.)
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Brodrib Bros., 59 Congress St., Hartford, Conn.
 Bu-Nite—See Butler Mfg. Co.
 Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
 Clark-Turner Piston Co., 1249 S. Los Angeles St., Los Angeles, Cal. (See page 713.)

Cochran Piston Corp., Detroit, Mich. (See page 708.)

Craig-Hunt—See Speedway Engineering Co.
 Dall Motor Parts Co., Lock Box 32, Vermillion, O. (See page 717.)
 Doane Machine Co., Waltham, Mass.
 Deputy Bros., Canterbury, N. H.
 Dow Chemical Co., Midland, Mich.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Bemiller Foundry & Machine Co., Bellville, O. (See page opposite Title Page.)
 K-P—See Keys Piston Ring Co.
 Kant-Skore Piston Co., 520 Mutual Life Bldg., Buffalo, N. Y. (See page 613.)
 Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 623.)
 Launchin-Loehr Lubricating Piston Co., 220 Cedar St., Green Bay, Wis.
 Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y.
 Litewate—See Western Pump Co.
 M & P Co., Saranac Lake, N. Y.
 McCadden Machine Works, 502-12 Fourth St., N., St. Cloud, Minn.
 Magnelite—See Sunderland Machine Shops.
 Marco—See Marvel Machinery Co.
 Marvel Machinery Co., Minneapolis, Minn. "Marco." (See pages 623 and 717.)
 Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R & M Malumium."
 Noonan Mfg. Co., D. R., Paris, Ill.
 R & M Malumium—See Modern Electric & Machine Co.
 Rite-Wate—See American Engine & Airplane Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Very-Lite."
 Seymour Laboratoried Units, 3009 Lisbon Ave., Milwaukee, Wis.
 Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 409.)
 Spencer-Smith Machine Co., Howell, Mich. (See page 715.)
 Sunderland Machine Shops, Omaha, Neb. "Magnalite." (See page 349.)
 Western Pump Co., 428 Third St., Davenport, Ia. "Litewate."
 Whitman Luvium Metal Mfg. Co., 6900 S. Broadway, St. Louis, Mo.

PLANER CHUCKS—See Chucks, Planer

PLANER TOOL HOLDERS—See Holders, Lathe and Planer Tool

PLANER TOOLS—See Tools, Lathe and Planer

PLANERS, Metal

American Tool Works Co., Pearl St. & Eggleston Ave., Cincinnati, O.
 Betts Machine Co., Rochester, N. Y.
 Cincinnati Planer Co., 3120 South St. (Oakley), Cincinnati, O.
 Cincinnati Shaper Co., Elam St. & Garrard Ave., Cincinnati, O.
 Cleveland Planer Co., 3148 Superior Ave., Cleveland, O.
 Gray Co., G. A., Gest & Depot Sts., Cincinnati, O.
 Hamilton Machine Tool Co., Hamilton, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."

Everything is listed under the NOUN or principal word



Manufacturers of high grade motors know that pistons are the lungs of the motor.

Therefore, details of finish are safeguarded by us after each operation by most rigid inspection.

**OUR ENTIRE ORGANIZATION IS PISTON-TRAINED
OUR EQUIPMENT PISTON-SPECIAL**

Let us quote on your next piston requirements

WISCONSIN MACHINERY & MFG. COMPANY
MILWAUKEE, WISCONSIN



LIGHT WEIGHT GREY IRON PISTONS

for
Automobiles - Trucks - Tractors

**ACCURACY - QUALITY
GUARANTEED**

Immediate Shipments
Distributed by Bona Fide Jobbers

WAINWRIGHT ENGINEERING CORP.
Connersville - Indiana

quality pistons

largest exclusive manufacturers of pistons in the automotive industry.

automobile, aircraft, truck and tractor pistons.

highest grade semi-steel castings.

our capacity insures excellent deliveries. our engineering department always at your service.

spencer-smith machine co.
howell, michigan



"TREAT 'EM ROUGH" STEEL STORAGE TANKS

IMMEDIATE SHIPMENT

300	gallons	33 in. diam. by 5 ft. 0 in. long
500	gallons	51 in. diam. by 5 ft. 0 in. long
875	gallons	53 in. diam. by 5 ft. 0 in. long
1,000	gallons	64 in. diam. by 5 ft. 0 in. long
2,000	gallons	64 in. diam. by 10 ft. 0 in. long
5,000	gallons	9 ft. 6 in. diam. by 9 ft. 9 in. long
10,000	gallons	9 ft. 6 in. diam. by 19 ft. 6 in. long
12,000	gallons	9 ft. 6 in. diam. by 23 ft. 6 in. long
15,000	gallons	9 ft. 6 in. diam. by 29 ft. 4 in. long
20,000	gallons	9 ft. 6 in. diam. by 39 ft. 0 in. long

Each tank is provided with standard cap screwed manholes and pipe connections to suit your convenience. Each tank is welded throughout, guaranteed absolutely oil tight and first class in every respect. Material full 1/4-in. plate, but other sizes can be furnished if desired. Heads are flat and heavily reinforced with 6-in. channel.

Fabricated Steel Products Corporation
Box 900, Leetonia, Ohio

Please mention The Automobile Trade Directory

PLANERS, Metal (Continued)

Ohio Machine Tool Co., Kenton, O.
 Pond—See Niles-Bement-Pond Co.
 Powell Machine Co., 243 Stafford St., Worcester, Mass.
 Putnam Machine Co., Newton Pl., Fitchburg, Mass.
 Rockford Machine Tool Co., 2400 Kiswaukee St., Rockford, Ill.
 Stapp & Co., John B. Dunkirk, N. Y.
 Very-Lite—See Saginaw Metal Parts Corp.
 Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.
 Woodward & Powell Planer Co., Webster St. & B. & A. R. R., Worcester, Mass.

PLANERS, Wood

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
 Bentel & Margedant Co., Hamilton, O.
 Coffnell & Dengler Machine Co., Allen & Platt Sts., Rochester, N. Y.
 Cordesman, Meyer & Co., 53-57 Center Ave., Cincinnati, O.
 Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
 Crescent Machine Co., Leontonia, O.
 Deffance Machine Works, 484 Perry St., Deffance, O.
 Falls Machine Co., Sheboygan Falls, Wis.
 Fay & Egan Co., J. A., Cincinnati, O.
 Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.
 Hermance Machine Co., 178 Campbell St., Williamsport, Pa.
 Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.
 Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.
 Porter Machinery Co., C. O., 606-08 Front Ave., N. W., Grand Rapids, Mich.
 Power & Co., L., 20 S. 23rd St., Philadelphia, Pa.
 Prybil Machine Co., P., 512-24 W. 41st St., New York, N. Y.
 Schneider & Goosman Machine Co., Cincinnati, Ohio.
 Smith Machine Co., H. B., Smithville, N. J.
 Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.
 Whitney & Son, Baxter D., Winchendon, Mass. (See pages 467 and 541.)
 Yates Machine Co., P. B., Beloit, Wis.

PLANES, SEA—See Section I

PLANETARY GEARS—See Gears, Transmission

PLANS, Dealer Merchandising

Munn Co., John O., Bank of Commerce Bldg., Toledo, O. (See page 355.)

PLANTS, Farm Lighting

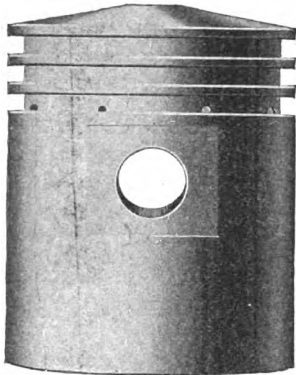
A-C Electrical Mfg. Co., U. B. Bldg., Dayton, Ohio.
 Alamo Farm Light Co., Tower Bldg., Chicago, Ill.
 American Farm Equipment Co., Williamsport, Pa.
 Bishop & Son Co., A. L., Fargo, N. Dak. "Gate City Lite."
 Carlton, Young & Catlin, Grand Central Palace, New York, N. Y. "C-Y-C."

C-Y-C—See Carlton, Young & Catlin.
 D-Light—See Dodge, H. C.
 Delco—See Domestic Engineering Co.
 Dodge, H. C., 32-46 Olger St., Boston, Mass. "D-Light."
 Domestic Engineering Co., Dayton, O. "Delco."
 Electric Auto-Lite Corp., Toledo, O. "Willys."
 Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
 Fort Dearborn Mfg. Co., Sterling, Ill.
 Gate City Lite—See Bishop & Son Co.
 Genco—See General Gas Electric Co.
 General Gas Electric Co., Seventh & Middle Sts., Hanover, Pa. "Genco."
 Globe Electric Co., 14-28 Keefe Ave., Milwaukee, Wis.
 Hanover Utilities Co., World Bldg., New York, N. Y. "Sun-Lite."
 Holt Farm Light Co., Ludington, Mich.
 Independent Light & Power Co., Oelwein, Ia.
 Jupiter—See Perfection Storage Battery Co.
 Ker-O-El—See Mathews Co.
 Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
 Kohler Co., Kohler, Wis.
 Lalley Light Corp., 3171 Bellevue Ave., Detroit, Mich.
 Langstadt-Meyer Co., 767 College Ave., Appleton, Wis.
 Lauson-Lawton Co., 530 Brown St., De Pere, Wis.
 Lincoln Light Corp., 151 Seventh St., Milwaukee, Wis.
 Linderman Steel & Machine Co., Dayton, O.
 Litscher Lite Corp., 1140 Monroe Ave., Grand Rapids, Mich.
 Main Electric Co., Cleveland, O.
 Marco Light & Power Corp., 2430 Michigan Ave., Chicago, Ill.
 Mathews Co., Port Clinton, O. "Ker-O-El."
 Mathews Engineering Co., 460 Monroe St., Sandusky, O. (See page 357.)
 Mayhew Co., Milwaukee, Wis.
 Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
 Multiple Storage Battery Co., Van Wyck Ave. & L. I. R. R., Jamaica, N. Y.
 National Electric Lighting Co., Wilton Junction, Iowa.
 Ohio Electric Works, 6304-06 Ellen Ave., N. W., Cleveland, O.
 Phelps Light & Power Co., Rock Island, Ill.
 Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
 Petroleum Engine & Mfg. Co., 120 Broadway, New York, N. Y.
 Radiant Mfg. Co., Ferry & Water Sts., Sandusky, O.
 Recco—See Rural Electric Equipment Co.
 Regal Gasoline Engine Co., 59 W. Pearl St., Coldwater, Mich. "Regalite."
 Regalite—See Regal Gasoline Engine Co.
 Rural Electric Equipment Co., Canton, Pa. "Recco."
 Stearns Motor Mfg. Co., Ludington, Mich.
 Sturtevant Co., B. F., Hyde Park, Boston, Mass.
 Suburban Lighting Co., Toledo, O.
 Sun-Lite—See Hanover Utilities Co.
 Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
 Universal Products Co., Oshkosh, Wis.
 Warnerlite Products Corp., Davenport, Iowa.
 Willys—See Electric Auto-Lite Corp.
 Worthington Pump & Machinery Corp., 106 Holthoff Pl., Cudahy, Wis.

PLATE GLASS—See Glass, Polished Plate

Everything is listed under the NOUN or principal word

DALL SEMI-STEEL PISTONS



Dall Pistons have earned an enviable reputation for accuracy and close weights. Figures cheerfully given on specifications.

Special attention to Service requirements. Send for Bulletin No. 101.

The Dall Motor Parts Company
Lock Box 22, Vermilion, Ohio

DOUBLE SERVICE

The Big Feature of This Timer

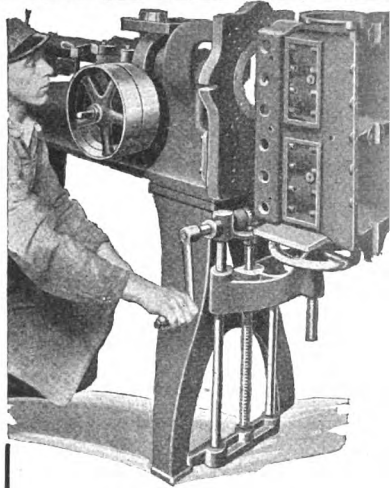
RANDALL DOUBLE TIMER SERVICE

Lasts twice as long as the ordinary timer. No "shorts" or misfires—working surface is turned away from engine, thus avoiding oil splash and grit. Made of absolute non-conducting material. Removable dust and oil proof cap. No pins, springs or rollers to rust, break and wear out. Compare the price with others—\$2.50.

JOBBER AND DEALERS: Write for terms on this sure and quick seller. **EVERY** Ford and Fordson owner a ready prospect.

DUFF DISTRIBUTING CO., Inc.
2 Rector Street New York City

MARVEL Cylinder Re-Boring Machine



Re-bores Any Cylinder in Less Time

Service wins new trade and holds old customers. Marvel Cylinder Re-boring Machine does a superior job in less time at less cost. Gives you bigger profit. Power driven, automatic, easily operated. Handles any gas engine cylinder from motorcycle to tractor.

Used and endorsed by thousands of automotive repair men and colleges. Business building service extends real dealer help to promote your success.

Write us.

**Write
Direct to the
Manufacturer**

MARVEL MACHINERY CO.
DESK 5
Minneapolis, Minn.

Please mention The Automobile Trade Directory

PLATES, Airplane Wing Socket

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

PLATES, Demountable Rim Wedge

(Small stamped Plates or Shims to be used under rim wedges to ensure their tightness)

American Auto Products Co., 1819 L St., N. W., Washington, D. C.

Hylon Mfg. Co., 153 E. State St., Alliance, O.
Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

PLATES, Differential Assembly, for Fords

Hinckley-Myers Co., Water St., Jackson, Mich.

PLATES, Heel, Pedal or Step

Cushion Pedal Co., 287 San Fernando Blvd., Los Angeles, Cal. (See page 471.)

General Etching & Mfg. Co., 313 S. Hamilton Ave., Chicago, Ill.

Hipco Mfg. Co., 34 Columbus Ave., Boston, Mass.

Humboldt—See Republic Auto Parts Co.

Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)

Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass.

Uniq—See Spiro Mfg. Co.

PLATES, Name

Abbott W. H., 46 Greenwich Ave., New York, N. Y.

American Name Plate Co., 352 Atlantic Ave., Boston, Mass.

Balser Co., Gus, New York American Bldg., New York, N. Y.

Bastian Bros. Co., 69 Mt. Hope Ave., Rochester, N. Y.

Blackinton & Co., V. H., 140 Commonwealth Ave., Attleboro Falls, Mass.

Bernard Co., J., 423-30 E. 53d St., New York, N. Y.

Chandler Co., Napier St., Springfield, Mass.

Childs & Co., S. D., 126 S. Clark St., Chicago, Ill.

Chippewa Bronze Co., 1469 E. 118th St., Cleveland, O.

Colgan Co., J. W., 4 Alden Ct., Boston, Mass.

Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill.

(See page 719.)

Detroit Name Plate Etching Co., 684-90 E. Congress St., Detroit, Mich.

(See page 719.)

Electro-Chemical Engraving Co., 440-50 19th St., Brooklyn, N. Y.

Etching Company of America, 1520 Montana St., Chicago, Ill.

Federal Name Plate & Novelty Co., 732 Federal St., Chicago, Ill.

Fogarty Mfg. Co., 1121 E. Second St., Dayton, O.

Fox Co., Gustave, 411-13 Race St., Cincinnati, O.

General Etching & Mfg. Co., 313 S. Hamilton Ave., Chicago, Ill.

General Metal Crafts Co., 2127 Tilden St., Chicago, Ill.

Grammes & Sons, L. F., 344 Union St., Allentown, Pa.

Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.

Hanson Co., C. H., 176 N. Clark St., Chicago, Ill.

Highton & Sons Co., Wm., Nashua, N. H.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Matthews & Co., Jas. H., 185 Forbes Field, Pittsburgh, Pa.

Metallograph Corp., Grand Central Terminal, New York, N. Y.

Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.

Murdock Co., Jas. W., 116 Opera Pl., Cincinnati, O.

National Decalcomania Co., 240 N. 60th St., Philadelphia, Pa.

National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)

Ness, Jr., Geo. M., 61 Fulton St., New York, N. Y.

New York Stencil Works, 100 Nassau St., New York, N. Y.

O'Connor, James, Nevada Bldg., Cincinnati, O.

Palm, Fechteler & Co., 67 Fifth Ave., New York, N. Y.

Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 587.)

Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.

Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.

Shank Sign Co., E. A., 19 Park Row, New York, N. Y.

Shepard Art Metal Co., Detroit, Mich.

(See page 481.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Stafford Co., N., 87 Fulton St., New York, N. Y.

Torrey Roller Bushing Works, Bath, Me.

Turner Brass Works, Sycamore, Ill.

(See page 177.)

Tyler Mfg. Co., 755 Boylston St., Boston, Mass.

Walter & Sons, N. C., 3 Park Row, New York, N. Y.

Watson Co., Mechanics St., Attleboro, Mass.

Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.

Whitehead & Hoag Co., 273 Sussex Ave., Newark, N. J.

Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

Yeuell Co., E. V., rear 106 Pleasant Ave., Malden, Mass.

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

(See page 481.)

Everything is listed under the NOUN or principal word

**HIGH GRADE
NAME PLATES IN ALUMINUM, BRASS, COPPER AND ZINC.
SIGNS, DIALS AND ADVERTISING NOVELTIES.
CAUTION AND INSTRUCTION PLATES.
BADGES AND CHECKS.**

SAMPLES AND SKETCHES SUBMITTED ON REQUEST.

"SERVICE" IS OUR MOTTO

Detroit Name Plate Etching Co.

684-690 EAST CONGRESS STREET, DETROIT, U. S. A.



SALES REPRESENTATIVES:

**The N. B. Brokerage Co.,
Minneapolis, Minn.**

**Clinton Equipment Co.,
Athens, Ga.**

**Product Sales Company,
Baltimore, Maryland.**

**Van Camp Hardware &
Iron Co., Indianapolis, Ind.**

**J. W. Merickel Miami,
Fla.**

**This machine can be
attached to any "blind"
Gasoline Pump.**

**Full particulars on re-
quest.**

**Live representatives,
write for proposition.**

The Avon Specialties Mfg. Co.

Manufacturers

44-46 Market Place, Baltimore, Md.

CROWE Name Plates

**We specialize in the production of
Etched Name Plates**

**Scuff or Sill, Serial, Hub Cap and Hood
Plates for the**

AUTOMOTIVE INDUSTRIES

**We have recently completed a large addi-
tion to our plant and are better equipped
to serve you than ever before.**

Crowe Name Plate & Engraving Co.

1749 Grace Street, Chicago

Branch Offices:

New York City	Boston	Detroit	Baltimore
Cleveland	Cincinnati	Philadelphia	
Minneapolis	Los Angeles	San Francisco	

Screw Machine Products

**Our Automatics will turn out work up to 1 5/8" outside diam-
eter. We are specially equipped to make bushings from brass,
bronze, or steel.**

Send us your blue prints for estimate.

HIGH QUALITY. QUICK SERVICE.

MAY AUTOMATIC PRODUCTS CO.

DETROIT

14th and Howard Sts.

MICHIGAN

Please mention The Automobile Trade Directory

PLATING, Brass and Nickel (Continued)

Boston Nickel Plating Co., 160 Portland St., Boston, Mass.
 Brown Mfg. Co., W. G., Kingston, N. Y.
 Cheney & Son, S., Manlius, N. Y.
 Creutz Plating Co., Third & Vine Sts., Cincinnati, O.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
 Fitchburg Plating Works, rear 3 Main St., Fitchburg, Mass.
 Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich.
 Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
 Iles Mfg. Co., E. W., Shelton, Conn.
 Johnson Bronze Co., New Castle, Pa. (See page 181.)
 Keuka Industries, Inc., Hammondsport, N. Y.
 Keyless Lock Co., Indianapolis, Ind.
 Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.
 Lionel Corp., 605-31 S. 21st St., Irvington, N. J.
 Lynam Electrical & Plating Co., Wm., Dakota & Kilmer Sts., Dayton, O.
 McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
 Maforco—See Market Forge Co.
 Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.
 Market Forge Co., Garvey St. & Boulevard, Everett, Mass. "Maforco."
 Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.
 Monarch Stamping Co., Chappaqua, N. Y.
 National Metalware Co., 95 S. Fifth St., Brooklyn, N. Y.
 Nehls Plating Works, Barney, 1462 Brush St., Detroit, Mich.
 Paramount Mfg. Co., Westfield, N. J.
 Phillips, F. C., Hill St., Stoughton, Mass.
 Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.
 Saml Products Co., 209 W. Randolph St., Chicago, Ill.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

PLATING COMPOUNDS—See Compounds, Chemical Plating

PLATING NICKEL—See Plating, Brass

PLATINUM POINTS—See Platinum; also Points, Sparking

PLATINUM RIVETS—See Platinum; also Points, Sparking

PLATINUM SCREWS—See Platinum; also Points, Sparking

PLATINUM, Sheet, Rod and Wire

(For contact screws, rivets and points—See also Points, Sparking. For Platinum substitutes—See Points, Sparking)

American Platinum Works, 225-31 N. J. R. R. Ave., Newark, N. J.

Baker & Co., Newark, N. J. (See page 811.)

Bishop & Co., Platinum Works, J., Malvern, Pa.

Commercial Research Co., Jackson Ave. & Honeywell St., Long Island City, N. Y.

Dee & Co., Thos. J., 5 S. Wabash Ave., Chicago, Ill.

Goldsmith Bros. Smelting & Refining Co., 29 E. Madison St., Chicago, Ill.

National Smelting & Refining Corp., 33 John St., New York, N. Y.

Platt Co., C. S., 29 Gold St., New York, N. Y.

R. & H. Platinum Works, 709 Sixth Ave., New York, N. Y. (See page 721.)

Wilson Co., H. A., 97 Chestnut St., Newark, N. J.

PLIERS, Combination

Athol Machine Co., Athol, Mass.

Barcalo Mfg. Co., Buffalo, N. Y. "Bull Dog."

Bergman Tool Mfg. Co., 1575-76 Niagara St., Buffalo, N. Y.

Bernard—See Scholhorn Co.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Hayden."

Bonney Forge & Tool Works, Allentown, Pa.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buffum Tool Co., Louisiana, Mo. (See page 395.)

Bull Dog—See Barcalo Mfg. Co.

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y. "Shur-Kut."

Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."

Clipper Tool Co., 284 Mills St., Buffalo, N. Y.

Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Simplex."

Cronk & Carrier Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y.

Cushman Co., Inc., Champaign, Ill. (See page 479.)

Dreadnaught—See Krauter & Co.

Eagle—See Mechanical Specialties Co.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Flash Sales Corp., 4809 N. Ashland Ave., Chicago, Ill. "Plwrench."

Gittatit—See Smith & Co.

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)

Handee—See Racine Handy Mfg. Co.

Hargrave—See Cincinnati Tool Co.

Hayden—See Billings & Spencer Co.

Herbrand Co., 109-25 E. State St., Fremont, O.

Hjorth & Co., Wm., 28 Taylor St., Jamestown, N. Y.

Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Reliance."

K. I. T.—See Graham Roller Bearing Co.

Krauter & Co., Newark, N. J. "Dreadnaught," "Victor." (See page 1001.)

Lakeside Forge Co., Erie, Pa. (See page 1007.)

Larock—See Mechanical Specialties Co.

McKail Drop Forge Co., 14 Perry St., Buffalo, N. Y.

Markoml Co., 7 Davidson St., W., Detroit, Mich.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Mechanical Specialties Co., 122 S. Michigan Ave., Chicago, Ill. "Eagle," "Larock."

Everything is listed under the NOUN or principal word

MERCHANT'S ANTI-SKID Chain Tighteners

A simple device which fills a long-felt want and is a necessity to all motorists who use chains.

It prevents loss of chains and unnecessary wear and breakage of cross chains.

It stops rattling and banging of fenders by taking up the slack when the chains wear and stretch.

Most important of all, by a scientific equalization of tension from the five points of connection it allows the chain to creep, thus obviating any injury to the tire, at the same time doing its work perfectly.

Actual use has proven these facts.

Made in sizes to fit all cars or trucks.

Retail Price—\$1.00

Write us to-day for full particulars and our prices to the trade.

M. H. MERCHANT CORPORATION
Factory 238 Emma St., Syracuse, N. Y.



IRIDIO

IRIDIO-PLATINUM TIPPED SCREWS & RIVETS

What You Need, When You Need It

We carry all standard sizes of the best and most serviceable iridio-platinum heads securely welded on screws and rivets. We make—on short notice—any special style according to specification or degree of hardness.

“Quick quality-service.”

R. & H. Platinum Works
709 6th Avenue, New York City
Factory: Perth Amboy, N. J.

The Knowledge and Special Training to Plan Exactly the Tools Best Suited to Your Production Plan

CARROLL

ENGINEERING SERVICE

Your Tool Engineers, when designing your production tools, are actually writing your “Profit and Loss” statement. Efficiency in this department is necessary to the success of your production plan.

We have carefully built up an organization of experts in the design and manufacture of special tools for production purposes.

This organization can serve you far better,

and even cheaper, than any ordinary Tool Room force, or any other organization of any kind unless it possesses the same special training and wide experience.

Our Designing Department, we believe, is the best of its kind. It is so considered by some of America's largest automotive manufacturers and machine tool builders.

Let us tell you what we have done for others.

The Carroll Engineering Company

Tool Engineers and Builders

DAYTON

OHIO

U. S. A.

DETROIT:

NEW YORK:

2023 Dime Bank Building

**Foreign Sales
American Machinery Syndicate
37 West 39th Street**

Please mention The Automobile Trade Directory

PLIERS, Combination (Continued)

Mossberg Co., Frank, Attleboro, Mass., (See page 1068.)
 National Plier Co., 67 Forest Ave., Buffalo, N. Y.
 Osborne & Co., C. S., Newark, N. J.
 Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Pilwrench—See Flash Sales Corp.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Red Devil—See Smith & Hemenway.
 Reed Mfg. Co., W. Eighth St., Erie, Pa.
 Reliance—See Kilborn & Bishop Co.
 S. & I. Co., 55-57 Governor St., Springfield, Mass.
 Scholhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Bernard."
 Shark—See Wakesfield Mfg. Co.
 Shur-Kut—See Caldwell Tool Mfg. Co.
 Simplex—See Crescent Tool Co.
 Smith & Co., H. D., Plantsville, Conn. "Gittatit."
 Smith & Hemenway, 130 Cort St., Irvington, N. J. "Red Devil."
 Starrett Co., L. B., Athol, Mass.
 Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
 V. & B.—See Vaughan & Bushnell Mfg. Co.
 Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."
 Victor—See Krauter & Co.
 Vlehek Tool Co., Cleveland, O.
 West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn.
 Whitaker Mfg. Co., Chicago, Ill. (See page 1075.)

PLIERS, GAS—See Pliers, Combination

PLIERS, TERMINAL—See Tools, Storage Battery Repair

PLUG BRUSHES—See Brushes, Spark Plug

PLUG BUSHINGS—See Bushings, Spark Plug Testing

PLUG CASES—See Cases, Spark Plug

PLUG CLEANERS—See Cleaners, Spark Plug

PLUG HOLDERS FOR FORDS—See Holders, Magneto Plug

PLUG GAGES—See Gages, Plug and Ring

PLUG SWITCHES—See Switches, Spark Plug

PLUG TESTERS—See Testers, Spark Plug

PLUG WRENCHES—See Wrenches, Nut and Bolt

PLUGS, Charging

Anderson Mfg. Co., Albert & J. M., 289 A St., Boston, Mass.
 General Electric Co., Schenectady, N. Y. (See page 779.)

Russell & Stoll Co., 48 Cliff St., New York, N. Y.
 Universal Electric Stage Lighting Co., 240 W. 50th St., New York, N. Y.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

PLUGS, Core Hole

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 897.)

PLUGS, Radiator Testing, for Fords

American—See Fairbanks Co.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
 Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)
 Service Station Equipment Co.—See Fairbanks Co.

PLUGS, Spark

A-A—See Aircraft & Motor Products Co.
 A. A. Mfg. Corp., 509 W. 42nd St., New York, N. Y. (See page 723.)
 A. C.—See Champion Ignition Co.
 Ace—See Comet Mfg. Co.
 A. I. M.—See Auburn Ignition Mfg. Co.
 Affinity—See Baysdorfer, Otto.
 Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.
 Aircraft & Motor Products Co., 299 Madison Ave., New York, N. Y. "A-A."
 Ajax—See Champion Spark Plug Co.
 Akron Spark Plug Co., Second Nat'l Bank Bldg., Akron, O. "Pilot."
 Allen Specialty Co., 2721 W. Lake St., Chicago, Ill. "Asko."
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 American Ace—See Brach Mfg. Co.
 American Auto Products Co., 1219 L St., N. W., Washington, D. C. "Federal."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."
 American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
 American Mfg. Co., 100 Main St., Evansville, Ind. "Red Chief."
 Anderson Spark Plug Co., 2700-10 N. Crawford Ave., Chicago, Ill.
 Arc-O-Mfg. Co., 2230 S. Michigan Ave., Chicago, Ill.
 Arrow—See Reflex Ignition Co.
 Asko—See Allen Specialty Co.
 Atlas Railway Supply Co., Manhattan Bldg., Chicago, Ill.
 Auburn—See New York Mica & Mfg. Co.
 Auburn Ignition Mfg. Co., Richmond, Ind. "Blazer," "A. I. M."
 Automat—See Automatic Ignition Co.
 Automatic Ignition Co., Foster Bldg., Denver, Colo. "Automat." (See page 727.)
 Automotive Supply Co., 24-26 Stone St., New York, N. Y. (Sole Distributors for Fowler Spark Plug Mfg. Co., New York, N. Y.)
 B. B.—See Brown Bag Filling Machine Co.

Everything is listed under the NOUN or principal word

Bingham Perfected Spark Plug

The Spark Plug that Sparks



Retail at \$1.25
Each

Tell at a glance whether each spark plug is working properly.

Guaranteed to work successfully in oil pumping cylinders.

*Liberal Discount
to Dealers*

Bingham Perfected Spark Plugs

324 Mulberry Street

Rockford, Illinois

Do You Know About Our Merchandising Proposition ?

Write for Particulars to

**Associated Automobile
Accessories Co., Inc.**

122 West 43rd Street
New York City

Jobbers

Retailers

FRANCHTOWN "775" INSULATORS

are used on
Pep Spark Plugs

and these insulators will stand any degree of heat or compression in an automobile engine without the slightest danger of breaking.

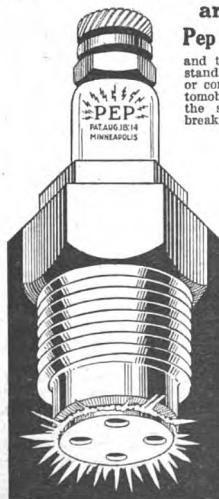
"775" Insulators were brought out by experts during the war to meet the heavy-duty requirements of aircraft motors—they stood the test and proved their merit.

PEP electrodes stand several hundred degrees more heat and much more electrical erosion than ordinary electrodes. A special cemented construction between insulator and electrode makes an absolutely gas-tight joint. These features, together with the special gaskets and gland nut construction, make PEP plugs as good as modern engineering science can build.

PEP Spark Plugs retail at \$1. This low price plus the many exclusive points of merit make PEP plugs ready-sellers. Our trade discounts are liberal—write us to-day.

UNITED SPARK PLUG CO.

403 Plymouth Bldg., Minneapolis, Minnesota



AAA SPARK PLUG

1921 Efficiency Model.

Two-piece construction. Easily cleaned.

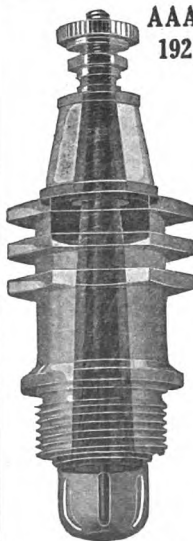
It's all in the basic design plus the electrode cap of thin special alloy.

Years of tests in the meanest plug destroying, oil leaking motors without a single failure.

Stays clean under the most adverse conditions of oil and carbon.

Reorders indicate profit and satisfaction. Write for details.

Attractive Discounts
Retail for \$1.25, all sizes.



A.A.A. Manufacturing Corp.

509 West 42d St.,

New York City

Please mention The Automobile Trade Directory

PLUGS, Spark (Continued)

- B. G.—See Brewster-Goldsmith Corp.
- B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
- B. G.—See Brewster-Goldsmith Corp.
- Baby—See Reflex Ignition Co.
- Ball Bearing Spark Plug Co., 614 Harrison Ave., Harrison, N. J.
- Bates—See Old Trail Garage.
- Baysdorfer, Otto, 210 N. 18th St., Omaha, Neb. "Affinity."
- Beaver Spark Plug Co., 1527 E. Lake St., Minneapolis, Minn.
- Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
- Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch," "Golden Giant," "White Cap," "Golden Eagle." (See page 946.)
- Bengal Mfg. Co., Fourth & Olive Sts., St. Louis, Mo.
- Benton Co., L. F., 300 Main St., Vergennes, Vt.
- Bethlehem Spark Plug Co., Bethlehem, Pa.
- Biehl, G. M., 204 S. Centre St., Pottsville, Pa.
- Big Chief—See Vulcan Spark Plug Co.
- Bingham Perfected Spark Plugs, 324 Mulberry St., Rockford, Ill. (See page 723.)
- Blazer—See Auburn Ignition Mfg. Co.
- Blitz—See Randall-Falchney Co.
- Blitzen—See Ideal Mfg. Co.
- Blu Streak—See Cumming-Forster Corp.
- Bosch—See American Bosch Magneto Corp.
- Bougie-Mercedes—See Hers.
- Brach Mfg. Co., L. S., 127-29 Sussex Ave., Newark, N. J. "American Ace."
- Brewster-Goldsmith Corp., 33 Gold St., New York, N. Y. "B. G."
- Brown Bag Filling Machine Co., 10 Main St., Fitchburg, Mass. "B. B."
- Burn-Clean—See Comet Tool & Mfg. Co.
- Carbo-Gas Co., 205 Huron St., Toledo, O.
- Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill. "Liberty," "United." (See pages 665 and 829.)
- Chain-O-Spark Co., 1307 Nicollet Ave., Minneapolis, Minn.
- Challenge Spark Plug Co., Crowley & Joliet Sts., Joliet, Ill.
- Champion Ignition Co., Flint, Mich. "A. C.," "Titan," "Cico." (See page 725.)
- Champion Spark Plug Co., 801 Avondale Ave., Toledo, O. "J-D," "Reliance," "Ajax," "Meteor," "Star," "Sta-Rite." (See page 727.)
- Cico—See Champion Ignition Co.
- Clean-E-Z-Primo—See Premier Electric Co.
- Comet Tool & Mfg. Co., 2015 S. Laflin St., Chicago, Ill. "Burn-Clean."
- Comet Mfg. Co., Lindsey Bldg., Dayton, O. "Ace."
- Cumming-Forster Corp., 220 S. State St., Chicago, Ill. "Blu Streak."
- Dayton Ignition Co., Eaker Bldg., Dayton, O. "Dico."
- Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
- De Luxe—See Lockwood-Ash Motor Co.
- Delta Mfg. Co., 9 Delancy St., Newark, N. J.
- Derr Mfg. Co., 90 W. Broadway, New York, N. Y. (See page 727.)
- Diamond—See Reflex Ignition Co.
- Dico—See Dayton Ignition Co.
- Eagle—See Janesville Products Co.
- Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. "Hercules."
- Eclipse—See Fulton Co.
- Ellenness—See L. & S. Mfg. Co.
- Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1043.)
- Express Spark Plug Co. of America, Westover Bldg., Washington, D. C.
- F. M. C.—See Ford Mica Co.
- Fan Flame Spark Plug Co., 32 Nepperhan St., Yonkers, N. Y.
- Faw Co., J. H., 27 Warren St., New York, N. Y. "Red Seal." (See page 243.)
- Federal—See American Auto Products Co.
- Federal Corp., Westfield, Mass. "Liberty," "Jumbo," "Victory."
- Fire-Rite Electric Co., 237 Kensington Ave., New Britain, Conn.
- F-I-R-O-L Spark Plug Co., 431 S. Dearborn St., Chicago, Ill.
- Flash—See Long Bros.
- Ford Mica Co., 14 Christopher St., New York, N. Y. "F. M. C."
- Fowler Spark Plug Co.—See Automotive Supply Co.
- Franks Mfg. Co., 524 Butterworth St., Grand Rapids, Mich.
- Fulton Co., 75th & National Aves., Milwaukee, Wis. "Eklips." (See pages 1017 to 1022.)
- Fyrac Mfg. Co., 214 E. State St., Rockford, Ill.
- Fyresum—See Wellman-Muter Corp.
- Gets Mfg. Co., Andrews, Ind.
- Glant—See Reflex Ignition Co.
- Globe—See Kahn Mfg. Co.
- Go Far—See Multiple Spark Plug Mfg. Co.
- Golden Eagle—See Benford Auto Products.
- Golden Giant—See Benford Auto Products.
- Goliath—See Sharp Spark Plug Co.
- Green Dragon Co., 54 W. Randolph St., Chicago, Ill.
- Green Jacket—See Splittdorf Electrical Co.
- Griffin Mfg. Co., 113 State St., Boston, Mass.
- H. M. S. Bull Dog—See Hartford Machine Screw Co.
- Hall Ignition Mfg. Co., Willimantic, Conn.
- Hampshire Mfg. Co., Hatfield, Mass. "Wissard."
- Hartford Machine Screw Co., Hartford, Conn. "Master," "H. M. S. Bull Dog." (See page 829.)
- Heif Co., Belvidere, Ill.
- Hercules—See Eclipse Mfg. Co.
- Herz, 182 Locust Ave., New York, N. Y. "Bougie Mercedes."
- Hi-Test Products Co., 669 W. Ohio St., Chicago, Ill.
- Hundred Per Cent Mfg. Co., 614 Washington St., Lynn, Mass.
- Hyatt Ignition Co., 600 N. High St., Columbus, O.
- Ideal Mfg. Co., 14th & Harrison Sts., (North Kansas City) Kansas City, Mo. "Blitzen."
- Ignition Co. of America, Fort Jervis, N. Y. (See page 727.)
- Imp—See Improved Motor Accessories Co.
- Improved Motor Accessories Co., 3405 Perkins Ave., Cleveland, O.
- J-D—See Champion Spark Plug Co.
- J. E. F. Spark Plug Co., 389-91 Fifth St., Milwaukee, Wis.
- Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis. "Eagle," "X. L."
- Johnson Spark Plug Co., 611 Pierce St., Sioux City, Ia. "M. C. D."

Everything is listed under the NOUN or principal word

AC

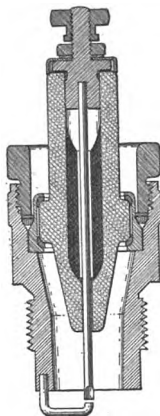
*The Standard Spark
Plug of the World*

Most fine makes of passenger cars and most trucks and tractors of established repute are factory equipped with AC Spark Plugs, and have been so equipped for years.

Champion Ignition Company
FLINT, Michigan

U. S. Pat. No. 1,185,727, April 18, 1915, U. S. Pat. No. 1,216,139, Feb. 13, 1917, Other Patents Pending

Why The Thomas "Twin Seat" Spark Plug is Best



Its "Twin Seat" construction provides for easy cleaning without removing Shell Body from motor. The firing points are self-adjusting after cleaning.

All pressure is relieved from binding nut thus preventing insulator breakage, but if insulator should be broken through carelessness or accident it can be easily replaced thereby saving cost of new plug.

Pre-ignition from overheated electrode is prevented and efficiency of combustion increased thereby reducing carbon deposits. Eliminates gas, compression and electrical leakage. Makes priming unnecessary. To prime slightly loosen binding nut, prime and tighten.

These are a few of the reasons why Thomas "Twin Seat" Spark Plugs are BEST for both motorist and Dealer. Write us today for further information and our trade proposition.

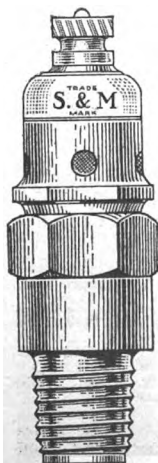
Patented in U. S. and foreign countries.

Manufactured by

THOMAS SPARK PLUG CO., Inc.
Roselle Park, New Jersey



S. & M. SPARK PLUGS Are Guaranteed 100,000 Miles



This guarantee is made possible by a new principle of ignition, not found in other plugs.

A spark intensifier is located in each plug, which shoots a blue white spark of radio frequency across the main spark gap. This big hot spark insures 100% gas explosion.

The sparking points are located within an auxiliary firing chamber, fully protected from splashing oil and making S. & M. Plugs positively self-cleaning. After thousands of miles of service the sparking points and porcelain are perfectly clean, even in cylinders which leak oil.

We want Dealers to handle this plug. Our terms are liberal. Write us today.

The S. & M. Manufacturing Co., Inc.
General Sales Office
Vandergrift Building
PITTSBURGH, PA.

Consider a Plug's Daily Performance Record

That's the big reason for selecting any make. It's the big reason why Reflex Spark Plugs are highly regarded among all classes of buyers. And note the variety of types—

DIAMOND Reflex, for general use.
GIANT Reflex, the heavy service plug.
TRACTOR Reflex, special type.
FORD Reflex, special type.
ARROW Reflex, regular extension, and Buick.
KID and BABY Reflex, for motorcycles.
LIGHTNING Reflex, for general use.
PRIMER Reflex, the real priming plug.
NUMBER 1 Reflex, for general purposes.
NUMBER 2 Reflex, made in millimeter sizes.
CONICAL Reflex, for hot running engines.

Engineers, Manufacturers, Jobbers,
Dealers—An inquiry will receive prompt attention.

The Reflex Ignition Company
8056 West 106th St., Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

Please mention The Automobile Trade Directory

PLUGS, Spark (Continued)

- Joly—See Lyons Ignition Co.
 Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.
 Jumbo—See Federal Corp.
 K. L. G.—See Smith & Sons.
 Kahn Mfg. Co., Milwaukee, Wis. "Globe."
 (See page 613.)
 Kant-Break Spark Plug Co.—See Socket Co.
 Kant-Mis Spark Plug Co., Green Bay, Wis. (See page 489.)
 Keeps Klean—See Porter Co.
 Kid—See Reflex Ignition Co.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
 Kopper King—See Sharp Spark Plug Co.
 Kopper King, Jr.—See Sharp Spark Plug Co.
 L-A—See Lockwood-Ash Motor Co.
 L. K. Auto Ignition Co., 1777 Broadway, New York, N. Y. "Prime-Or-Klean."
 L. & S. Mfg. Co., 2026 N. High St., Columbus, O. "Elleness."
 Lauraine Magneto Co., Long Island City, N. Y.
 Leader—See Vital Mfg. Co.
 Leich Electric Co., Genoa, Ill. "Radd."
 Liberty—See Mosler & Co.
 Liberty—See Casey-Hudson Co.
 Liberty—See Federal Corp.
 Liberty Ignition Co., Westfield, Mass.
 Liberty Spark Plug Co., 95 Lafayette St., Newark, N. J. "Motor King."
 Lightning—See Reflex Ignition Co.
 Lightning Spark Plug Co., 940-42 S. Los Angeles St., Los Angeles, Cal.
 Lincoln—See Standish Mfg. Co.
 Lion—See Rex Ignition Mfg. Co.
 Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich. "L-A," "Sterling."
 Longaker Co., V. A., 443-50 N. Capitol Ave., Indianapolis, Ind. "Balco."
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Royal," "Service," "Flash."
 Long Distance Spark Plug Co., 2616 Second Ave. N., Birmingham, Ala.
 Lydon Mfg. Co., 103 N. Wabash Ave., Chicago, Ill. "Lynamite."
 Lynamite—See Lydon Mfg. Co.
 Lyons Ignition Co., News Bldg., Paterson, N. J. "Joly."
 M. C. D.—See Johnson Spark Plug Co.
 Marvel Mfg. Co., 301 Madison Ave., Bridgeport, Conn. "New-Departure."
 Master—See Hartford Machine Screw Co.
 Meteor—See Champion Spark Plug Co.
 Michigan Spark Plug Co., 409 E. Fort St., Detroit, Mich. "Sure-Spark."
 Midwest Appliance Co., 1255 S. Wabash Ave., Chicago, Ill.
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis.
 Milwaukee Pointless Spark Plug Co., 2501 Hadley St., Milwaukee, Wis.
 Modco—See Modern Comb & Device Co.
 Modern Comb & Device Co., Reibold Bldg., Dayton, O. "Modco."
 Mogul—See Gas Motor Efficiency Co.
 Monarch—See Benford Auto Products.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Mosler & Co., A. R., So. Railroad Ave., Mt. Vernon, N. Y. "Liberty," "Triumph," "Vesuvius," "Superior."
 Motor King—See Liberty Spark Plug Co.
 Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn. "Go Far."
 Myers Spark Plug Co., Myers Bldg., Toledo, O.
 N. Y. & Brooklyn Auto Supply Co., 1717 Broadway, New York, N. Y. "Quality."
 New-Departure—See Marvel Mfg. Co.
 New York Mica & Mfg. Co., 27 Clark St., Auburn, N. Y. "Auburn," "Wright."
 Niles Mfg. Co., Niles, Mich. "Unique."
 Northwind Spark Plug Corp., 42 W. 39th St., New York, N. Y. (See page 738.)
 Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass. "Sootless."
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
 Ojus Spark Plug Works, 16 S. Congress Ave., Atlantic City, N. J.
 Olson Co., Wm. O., 431 S. Dearborn St., Chicago, Ill.
 Only Spark Plug Mfg. Co., Fifth & Long Sts., Columbus, O.
 P & P—See Page & Pohle.
 Page & Pohle, 12 Maple St., Lynn, Mass. "P & P."
 Panther—See B. A. T. Co.
 Penn Mfg. Co., 319 W. Ninth St., Kansas City, Mo.
 Pennsylvania Rubber & Supply Co., 2819 Prospect St., Cleveland, O. "Prasco."
 Pep—See United Spark Plug Co.
 Perron Co., Sparta, Wis.
 Pilot—See Akron Spark Plug Co.
 Pittsburgh Visible Spark Plug & Mfg. Co., 460-68 Melwood Ave., Pittsburgh, Pa.
 Porter Co., 20 W. Jackson Blvd., Chicago, Ill. "Keeps Klean."
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Clean-E-Z-Prime."
 Prime-Or-Klean—See L. K. Auto Ignition Co.
 Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
 Protecto—See Vital Mfg. Co.
 Prasco—See Pennsylvania Rubber & Supply Co.
 Puritan—See Symonds Co.
 Quality—See N. Y. & Brooklyn Auto Supply Co.
 Radd—See Leich Electric Co.
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Randall-Faichney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Blitz."
 Ray-O Mfg. Co., 246-52 Fulton St., Brooklyn, N. Y.
 Red Chief—See American Mfg. Co.
 Red Head Spark Plug Corp., 88 Reade St., New York, N. Y.
 Red Line, Inc., Grand Rapids, Mich. (See page 667.)
 Red Seal—See Faw Co.
 Reflex Ignition Co., 3056 W. 106th St., Cleveland, O. "Arrow," "Lightnings," "Giant," "Baby," "Kid," "Diamond." (See page 725.)
 Reliance—See Champion Spark Plug Co.
 Renu Corp., 273 State St., New Haven, Conn.
 Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y. (See page 815.)
 Richey Spark Plug Co., 20 Broad St., New York, N. Y.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 Royal—See Long Bros.
 Rummell Mfg. Co., 117 E. Sandusky St., Findlay, O.
 Rusco Internal Spark Plug & Accessory Co., 3101 S. State St., Chicago, Ill.
 S. & M. Mfg. Co., Vandergrift Bldg., Pittsburgh, Pa. (See page 725.)
 Service—See Long Bros.
 Sharp Spark Plug Co., C. A. C. Bldg., Cleveland, O. "Goliath," "Kopper King," "Kopper King, Jr."
 Shaw Mfg. Co., Oak Park, Ill. "Triumph."

Everything is listed under the NOUN or principal word

Champion

Dependable Spark Plugs



Free Offer To Dealers

We will send you, free of all costs, one of these handsome Merchandisers with a shipment of any one of five different assortments of Champion Spark Plugs. You can take this up with your jobber or write us direct for full details.

CHAMPION SPARK PLUG COMPANY
502 Avondale Avenue Toledo, Ohio

DERF

**360 Points Ignition
SPARK PLUG
INDESTRUCTIBLE CORE**

This is not just another spark plug, but a distinctive plug so designed that it conforms with the present day low grade of fuel—in other words it's a 1919 plug for 1919 gasoline. Think what that means and then you'll want to handle it yourself.

Automobile Club of America, certified test No. 38, with 8-cylinder Cadillac Limousine, shows saving of 25%.

Motor Truck Club of America, certified test 5 ton truck, 5 tons of coal, total weight 20,700 lbs. shows saving of 34.4%.

This test makes 27¢ gasoline cost 18¢ per gallon.

Live dealers can find no excuse for not selling this Spark Plug.

Write at once for full details.

Derf Mfg. Co.
90 West Broadway, cor.
Chambers St., Gerken
Bldg., N. Y. C.



The AUTOMAT Plug

SELF-CLEANING

Does everything any other spark plug does and

SIX

things no other can do.

IT

- (1) Cleans itself
- (2) Saves gasoline
- (3) Increases power
- (4) Cools itself
- (5) Reduces "oil pumping"
- (6) Permits direct priming

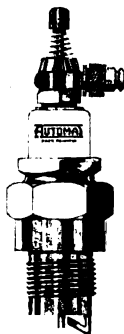
The AUTOMAT was subjected to severest tests for over a year and a half under actual operating conditions, without a failure. Official tests and letters in our files prove our claims.

The materials and workmanship in the AUTOMAT are of the highest grade.

Each AUTOMAT is guaranteed without limit as to time.

DEALERS: Write for our proposition and prices, stating your approximate monthly needs.

THE AUTOMATIC IGNITION CO.
Foster Building Denver, Colorado



A Spark Plug That Sparks

under the meanest conditions to which a Plug can be subjected.

For more than a year this Plug has given perfect satisfaction in motors where ordinary Plugs failed.

It is so designed that it stays clean under the most adverse conditions of oil and carbon.

No porcelain to crack, chip or break. Best grade

mica used for insulation, producing a trouble-free, indestructible Plug. The Dealer whose first consideration is to handle a quality product will find that this plug exceeds his most sanguine expectations.

Attractive discounts to the trade.

IGNITION CO. OF AMERICA
Port Jervis, New York



PLUGS, Spark (Continued)

- Smith & Sons, S., 154 Nassau St., New York, N. Y. "K. L. G." (Importers.) (See page 253.)
- Socket Co., C. W., Free Press Bldg., Detroit, Mich. (Sole Distributors for Kant-Break Spark Plug Co., St. Louis, Mo.)
- Sootless—See Oakes & Dow Co.
- Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Green Jacket."
- Sta-Rite—See Champion Spark Plug Co.
- Standish Mfg. Co., Myles, 419 S. 15th St., Omaha, Neb. "Lincoln."
- Star—See Champion Spark Plug Co.
- Star-K—See Stark-Inland Machine Works.
- Stark Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
- Sterling—See Lockwood-Ash Motor Co.
- Stewart-Warner Speedometer Corp., Chicago, Ill. "V-Ray." (See page 1063.)
- Stitt Ignition Co., 16 E. First Ave., Columbus, O.
- Su-Dig—See Superior Motor Power Co.
- Superior—See Mosler & Co.
- Superior Motor Power Co., 77 Spring St., New York, N. Y. "Su-Dig."
- Sure-Spark—See Michigan Spark Plug Co.
- Symms-Brownell Mfg. Co., Sioux Falls, S. Dak. "Wes-Plug."
- Symonds Co., Joseph H., Westfield, Mass. "Puritan."
- T-N-T Spark Plug Co., 2108 Superior Ave., W., Cleveland, O.
- Thomas Spark Plug Co., Roselle Park, N. J. (See page 725.)
- 3-A Co.—See American Automobile Accessories Co.
- Titan—See Champion Ignition Co.
- Triumph—See Mosler & Co.
- Triumph—See Shaw Mfg. Co.
- Tungsten Mfg. Co., Marshalltown, Ia. (See page 729.)
- Twin Fire Spark Plug Co., 3964 W. Grand River Ave., Detroit, Mich.
- United—See Casey-Hudson Co.
- United Spark Plug Co., 408 Plymouth Bldg., Minneapolis, Minn. "Pep." (See page 723.)
- Unique—See Niles Mfg. Co.
- V-D—See Viktry Mfg. Co.
- V-Ray—See Stewart-Warner Speedometer Corp.
- V. & B. 99—See Vaughan & Bushnell Mfg. Co.
- Valco—See Longaker Co.
- Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B. 99."
- Venusvius—See Mosler & Co.
- Victor Spark Plug Co., 250 Devonshire St., Boston, Mass.
- Victory—See Federal Corp.
- Visible Spark Plug Co., Bowman Bldg., Pittsburgh, Pa. "Viz."
- Viktry Sales Co., 389 Fifth St., Milwaukee, Wis. "V-D." (See page 509.)
- Vital Mfg. Co., 7507 Quincy St., Cleveland, O. "Protecto," "Leader."
- Viz—See Visible Spark Plug Co.
- Vulcan Ignition Co., 25 Church St., New York, N. Y.
- Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.
- Washington Automobile Supply Co., Washington, Ill.
- Wellman-Muter Corp., 31 E. Van Buren St., Chicago, Ill. "Fyresm." (See page 607.)
- Wes-Plug—See Symms-Brownell Mfg. Co.
- Wesplug—See Western Spark Plug Co.
- Western Screw Products Co., St. Louis, Mo. (See page 605.)
- Western Spark Plug Co., 14th & Harrison Sts., North Kansas City, Mo. "Wesplug."
- Whitaker Mfg. Co., Chicago, Ill. (See page 1075.)
- White Cap—See Benford Auto Products.
- Wichita Zig Zag Spark Plug Co., Wichita, Kans. "Zig Zag."
- Wizard—See Hampshire Mfg. Co.
- Wright—See New York Mica & Mfg. Co.
- X L—See Excelsior Leather Washer Mfg. Co.
- X L—See Janesville Products Co.
- Zig Zag—See Wichita Zig Zag Spark Plug Co.

PLUGS, Special and Priming Spark, for Fords

- A. A. A. Mfg. Corp., 509 W. 42nd St., New York, N. Y. (See page 723.)
- Ac—See Champion Ignition Co.
- Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.
- American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
- Arrow—See Reflex Ignition Co.
- Auburn Ignition Mfg. Co., Richmond, Ind. "Long Henry."
- Automotive Supply Co., 24-26 Stone St., New York, N. Y. (Sole Distributors for Fowler Spark Plug Mfg. Co., New York, N. Y.)
- B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
- Benford Auto Products, Inc., Mt. Vernon, N. Y. "Reliable Monarch." (See page 945.)
- Benton Co., L. F., 300 Main St., Vergennes, Vt.
- Bethlehem Spark Plug Co., Bethlehem, Pa.
- Bosch—See American Bosch Magneto Corp.
- Champion Ignition Co., Flint, Mich. "Ac." "Cico." (See page 725.)
- Champion Spark Plug Co., 802 Avondale Ave., Toledo, O. (See page 727.)
- Cico—See Champion Ignition Co.
- Clean-E-Z-Prime—See Premier Electric Co.
- Dayton Ignition Co., Eaker Bldg., Dayton, O. "Dico."
- Delta Mfg. Co., 9 Delancey St., Newark, N. J.
- Derf Mfg. Co., 90 W. Broadway, New York, N. Y. (See page 727.)
- Diamond Z—See Hampshire Mfg. Co.
- Dico—See Dayton Ignition Co.
- Flash—See Long Bros.
- Fowler Spark Plug Mfg. Co.—See Automotive Supply Co.
- Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 197.)
- Gardner Carburetor & Brass Works—See Gardner Auto Products Co.
- Gets Mfg. Co., Andrews, Ind.
- Globe—See Kahn Mfg. Co.
- Go Far—See Multiple Spark Plug Mfg. Co.
- Goliath—See Sharp Spark Plug Co.
- Fyrac Mfg. Co., 214 E. State St., Rockford, Ill.
- Hampshire Mfg. Co., Hatfield, Mass. "Diamond Z." "Wizard."
- Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 829.)
- Herz, 182 Locust Ave., New York, N. Y.

Everything is listed under the NOUN or principal word

DE LUXE

Demountable Sedan Top

PLEASE do not confuse the De Luxe tops with the cheaper kind. The De Luxe tops are built of the best of material and workmanship. We use a three-way rain vision windshield built in, all wool cloth lining, finished decks and backs, separate door locks, hardwood construction, thirteen coat painting.

De Luxe tops do not detract from the finest Automobile when mounted.

Your touring car looks just like a Sedan when mounted with a De Luxe top.

Why buy a cheap top when you can get a De Luxe at about the same price? You do not buy a top every day.

The De Luxe is Some Top

No mistake made when ordering a De Luxe Sedan top. We manufacture for Franklin 9-B Touring, Buick K-45 and others.

Write for circular and prices.

KALAMAZOO SEDAN COMPANY
KALAMAZOO, MICHIGAN

TUNGSTEN

TRADE MARK REGISTERED
SPARK PLUG
Always on the job



$\frac{1}{8}$ -Inch
Heavy Duty

Big sturdy plug made from the best materials, easily taken apart for cleaning, built with an entire absence of freak features

Mica Heavy Duty type particularly adapted for tractors, where extreme heat is experienced, has double mica insulation.

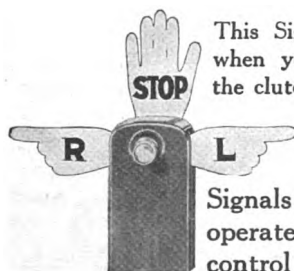
Tungstens are built in types and sizes for all cars, trucks and tractors.

Chart of spark plug sizes gladly sent to dealers on request.

Tungsten Manufacturing Co.
Marshalltown, Iowa

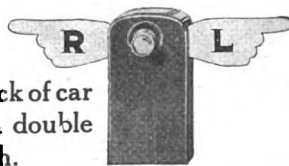
SAFDICATOR

THE UNIVERSAL SAFETY SIGNAL



This Signal operates when you push out the clutch.

Signals are automatically lighted at night when operating.



The two right and two left Signals on front and back of car operate together by a double control switch on dash.

This Signal goes on the right REAR fender.

PRICE
COMPLETE PAIR
\$35.00

This Signal goes in FRONT and fastens to the filler cap of radiator.

Write for Territory Proposition and Catalog.

MFG. BY

UNIVERSAL SAFETY CORPORATION
DECATUR, ILLINOIS

Please mention The Automobile Trade Directory

PLUGS, Special and Priming Spark, for Fords (Continued)

Hundred Per Cent Mfg. Co., 614 Washington St., Lynn, Mass.
 Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis., "X L."
 Kahn Mfg. Co., Milwaukee, Wis., "Globe," (See page 613.)
 Kopper King—See Sharp Spark Plug Co.
 Kopper King, Jr.—See Sharp Spark Plug Co.
 Leader—See Vital Mfg. Co.
 Lockwood-Ash Motor Co., 2052 Douglas St., Jackson, Mich.
 Long Bros., Broadway & Buckeye St., Kokomo, Ind., "Flash," "Royal."
 Long Henry—See Auburn Ignition Mfg. Co.
 Longaker Co., V. A., 441-50 N. Capitol Ave., Indianapolis, Ind., "Valco."
 M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.
 Master—See Hartford Machine Screw Co.
 Milwaukee Pointless Spark Plug Co., 2501 Hadley St., Milwaukee, Wis.
 Mosler & Co., A. R., S. Railroad Ave., Mt. Vernon, N. Y., "Superior," "Vesuvius."
 Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn., "Go Far."
 New York Mica & Mfg. Co., 27 Clark St., Auburn, N. Y., "Wright."
 Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass., "Sootless."
 Ojus Spark Plug Works, 16 Congress Ave., Atlantic City, N. J.
 Panther—See B. A. T. Co.
 Pep—See United Spark Plug Co.
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill., "Clean-E-Z-Prime."
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Red Head Spark Plug Corp., 88 Reade St., New York, N. Y.
 Reflex Ignition Co., 3056 W. 106th St., Cleveland, O., "Arrow," (See page 725.)
 Reliable Monarch—See Benford Auto Products.
 Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y., (See page 815.)
 Royal—See Long Bros.
 Rummell Mfg. Co., 177 E. Sandusky St., Findlay, O.
 Sharp Spark Plug Co., C. A. C. Bldg., Cleveland, O., "Goliath," "Kopper King," "Kopper King, Jr."
 Sootless—See Oakes & Dow Co.
 Standish Mfg. Co., Myles, 419 S. 12th St., Omaha, Neb.
 Stewart-Warner Speedometer Corp., Chicago, Ill., "V-Ray," (See page 1003.)
 Stitt Ignition Co., 16 E. First Ave., Columbus, O.
 Superior—See Mosler & Co.
 Superior Motor Power Co., 77 Spring St., New York, N. Y., "Twin-Tact."
 Twin-Tact—See Superior Motor Power Co.
 United Spark Plug Co., 403 Plymouth Bldg., Minneapolis Minn., "Pep," (See page 723.)
 V-Ray—See Stewart-Warner Speedometer Corp.
 Valco—See Longaker Co.
 Vesuvius—See Mosler & Co.
 Vital Mfg. Co., 7507 Quincy St., Cleveland, O., "Leader."
 Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.
 Wizard—See Hampshire Mfg. Co.

Wright—See New York Mica & Mfg. Co.
 XL—See Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis.

PLUGS, Tire Repair

Continental Rubber Works, 1902 Liberty St., Erie, Pa., "Vitalic."
 G. A. C.—See General Appliance Co.
 General Appliance Co., 100 Boylston St., Boston, Mass., "G. A. C."
 Goodrich Co., B. F., S. Main St., Akron, O.
 H & K Accessory Co., 4005 W. North Ave., Chicago, Ill., "No-C-Ment."
 No-C-Ment—See H & K Accessory Co.
 Sampson—See Stevens & Co.
 Stevens & Co., 375 Broadway, New York, N. Y., "Sampson," (See page 201.)
 Vitalic—See Continental Rubber Works.

PNEUMATIC BARREL PUMPS — See Pumps, Barrel Emptying

PNEUMATIC BRAKES—See Brakes, Air

PNEUMATIC CHUCKS — See Chucks, Pneumatic

PNEUMATIC DRILLS—See Tools, Pneumatic

PNEUMATIC GARAGE DOOR OPENERS — See Openers, Electric and Pneumatic Garage Door

PNEUMATIC MATTRESSES — See Mattresses, Pneumatic

PNEUMATIC TIRES—See Tires

PNEUMATIC TOOLS—See Tools, Pneumatic

PNEUMATIC WHEELS—See Wheels, Special

POCKET COMPASSES—See Compasses, Motorists' Pocket

POCKET LIGHTS—See Lights, Electric Flash

POCKET METERS—See Gages, Battery

POCKETS, CURTAIN, FOR FORDS—See Pockets, Top Curtain

POCKETS, Door, for Fords

(See also Covers, Slip; also Tops, Special)

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Atlas Specialty Mfg. Co., 10-22 E. 24th St., Chicago, Ill., (See page 307.)
 Carroll Mfg. Co., 683 Mass. Ave., Arlington, Mass.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill., "Esco."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill., (See page 843.)
 Esco—See Economy Seat Co.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O., "Sure-Fit."

Everything is listed under the NOUN or principal word

POCKETS, Door, for Fords (Continued)

Hopewell Bros., Watertown, Mass.
(See page 641.)
Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Princeford."
Princeford—See Prince Mfg. Co.
Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
Sure-Fit—See Hodes-Zink Mfg. Co.

POCKETS, STAKE—See Pockets, Truck Stake**POCKETS, Top Curtain for Fords**

Nofalt Motor Products Co., People's Gas Bldg., Holyoke, Mass.

POCKETS, Truck Stake

Eberhard Mfg. Co., 2784 Tennyson Ave., Cleveland, O.

POINTS, PLATINUM—See Platinum; also Points, Sparking**POINTS, Sparking**

(*Notes, Contact Points and Service of Platinum or Platinum Substitutes; for Platinum in sheets, rods or wire—See Platinum, Sheet*)

American Platinum Works, 225-31 N. J. R. R. Ave., Newark, N. J.
American Smelting & Refining Co., 32 John St., New York, N. Y.
Baker & Co., Newark, N. J.
(See page 611.)
Bishop & Co., Platinum Works, J., Malvern, Pa.
Commercial Research Co., Jackson Ave. & Honeywell St., Long Island City, N. Y. "Comreco."
Driver-Harris Co., Harrison, N. J.
Electrical Alloy Co., Morristown, N. J.
Gillfillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
Goldsmith Bros. Smelting & Refining Co., 29 E. Madison St., Chicago, Ill.
H. & L. Ignition Parts Mfg. Co., 300 W. Broadway, New York, N. Y.
K-W Ignition Co., 2900 Chester Ave., Cleveland, O. "Sparkite."
Lance Mfg. Co., 247 Center St., New York, N. Y.
Millwood-Bracket Co., 1601 Locust St., Des Moines, Ia. (See page 169.)
Multiple Point Spark Plug Co., 8 Carroll St., Brooklyn, N. Y.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich.
R. & H. Platinum Works, New York, N. Y. (See page 721.)
Schwartz, Daniel S., Bible House, New York, N. Y.
Sparkite—See K-W Ignition Co.

Tungsten Products Co., Erie Bldg., Cleveland, O.
Weidenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.
Wilson Co., H. A., 37 Chestnut St., Newark, N. J.

POLISHERS, ELECTRIC PORTABLE—See Drills, Electric Portable**POLISHES, Automobile Body**

(*See also Soaps, Automobile*)

A-No-One Polish Co., 363 Jefferson Ave., Rochester, N. Y.
A-S-K—See Dayton Polish Co.
Acme Polish Co., 7227 Mt. Vernon St., Pittsburgh, Pa.
Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
Adams & Elting Co., 718-26 Washington Blvd., Chicago, Ill. "Hy-Pol."
(See page 363.)
Ajaco—See Alsdorf Corp.
Alder Chemical Co., 135 Washington St., Mt. Vernon, N. Y. "Star Clean."
Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y. "Holbrook."
All-in-One—See Scientific Mfg. Co.
Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Dri-Klean-It."
American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
American Povar Corp., 536 W. 58th St., New York, N. Y. "Povar."
American Textile Mfg. Co., Cleveland, O. "Golden Rod," "Pyn-Ol."
Americus Products Mfg. Co., 627 W. Canfield Ave., Detroit, Mich.
Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rax."
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slakup."
Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
Autoglo—See Hill-Smith Metal Goods Co.
Autoglos Co., 232-42 W. Jefferson Ave., Detroit, Mich.
Auto-Gloss—See Indianapolis Paint & Color Co.
Auto-Klean—See Lucas & Co.
Auto-Lak—See Johnson & Son.
Auto-Lustre—Farley & MacNeill.
Autoclean—See Bridgeport Wood Finishing Co.
Auto-Newer—See Pimbley Paint & Glass Co.
Autolustre—See Moore & Co.
Automotive Mfg. Co., Washington, D. C.
Auto Products Mfg. Co., Buffalo, N. Y. "Rub-on."
B. P. S.—See Patterson-Sargent Co.
Baum's Castorine Co., 104 N. George St., Rome, N. Y.
Be-Be-Co—See Boston Blacking Co.
Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
Benoit, Constant A., Brooklyn, N. Y. "Permatex." (See page 227.)
Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Reflectal."
Blood & Co., T. L., 413 Wacouta st., St. Paul, Minn.
Blue Ribbon—See International Metal Polish Co.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

- Blue Ribbon—See Sawyer Oil Co.
 Blue Stripe—See Whitman, Bayard J.
 Body-Nu—See Nu Back Mfg. Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Boyle Co., A. S. 1224-49 Dana Ave., Cincinnati, O. "Old English."
 Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Perma-Lac."
 Brett Dimmer Co., A. H., Mason City, Ia. "C. C."
 Bridgeport Wood Finishing Co., New Milford, Conn. "AutoClean."
 Brilliant Lustre—See Hall-Thompson Co.
 Brooks & Co., Clarence, 249-77 Chestnut St., Newark, N. J.
 Buffalo Specialty Co., Buffalo, N. Y. "Liquid Veneer." (See page 227.)
 Bulls-Eye—See Zinsser & Co.
 Burnishine—See Paul & Co.
 Butler-Halley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
 Byron Motor Co., 90 Locust Ave. (Lake View), Worcester, Mass.
 C. C.—See Brett Dimmer Co.
 Callery & Co., W. W., 188 26th St., Pittsburgh, Pa.
 Camden Chemical Mfg. Co., 12th & Mickle Sts., Camden, N. J. "Grayhound."
 Campbell Glass & Paint Co., Main & Gratiot Sts., St. Louis, Mo.
 Cassene Mfg. Co., 3671 Rutger St., St. Louis, Mo.
 Century—See Arnstein, Eugene.
 Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
 Channell Chemical Co., 58 E. Washington St., Chicago, Ill. "O-Cedar."
 Chemical Specialties Co., 327 South West Blvd., Kansas City, Mo.
 Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Re-Nu."
 Cleanit—See Perkins-Campbell Co.
 Cleanola Co., Fulton Bldg., Pittsburgh, Pa.
 Clean-O-Shine—See Pratt Mfg. Co.
 Clean Shyne—See Sole Mfg. Co.
 Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Gem."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 361.)
 Common-Sense Mfg. Co., 506 N. Whittier St., St. Louis, Mo.
 Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.
 Crum Mfg. Co., 120 N. Main St., Ottawa, Kans. "New-Lustre."
 Crystal—See Kellerman, I.
 Cunningham & Berrier, 25 W. 43rd St., New York, N. Y. (Sole Distributors for Wonder-Mist Co., Boston, Mass.) (See page 327.)
 Damon Mfg. Co., 901 Rush St., Chicago, Ill. "999."
 Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."
 Dennison Co., S. A., Winthrop, Mass.
 Despal Chemical Co., 5229 Geary St., San Francisco, Cal. "French Maid."
 Detroit Autocleno Mfg. Co., 915 W. Warren Ave., Detroit, Mich.
 Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers Auto-Brite."
 Diamond Holdfast Rubber Co., 10 Auburn Ave., Atlanta, Ga.
 Diamond Polish Co., -Brown Bldg., Washington, Pa.
 Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.
 Dri-Klean-It—See American Automobile Accessories Co.
 Drury Chemical Products Co., 71 W. Eagle St., Buffalo, N. Y. "Wondrelustre."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Eie-Nie," "Re-Nu."
 E-Z-Kleen—See Rexine Co.
 Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 Eclat Mfg. Co., 3543 Michigan Blvd., Chicago, Ill.
 Eclipse—See Willey Co.
 Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
 Ensign Refining Co., 10708 Quebec Ave., Cleveland, O. "Polishem."
 Esta-Brite—Queen City Specialty Co.
 Ever-Shine—See Ferre Chemical Co.
 Ezy Brite—See Rodriguez, R. E.
 Fairchild & Bro., M. H., & W. Austin Ave., Chicago, Ill. "Royal Mist."
 Farley & MacNeill, 105-07 Federal St., Boston, Mass. (Sole Distributors for Greenleaf Products Co., Boston, Mass. "Auto Lustre.")
 Fessell's Laboratory, 9-13 Desbrosses St., New York, N. Y. (Sole Distributors for Golden Gate Mfg. Co., New York, N. Y.)
 Ferro Chemical Co., 5556 Broadway, Chicago, Ill. "Ever-Shine."
 Filmist—See Neu Metal Products Corp.
 Flebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Victor."
 Ford's Auto Polish Co., 84 William St., New York, N. Y.
 French Maid—See Despal Chemical Co.
 Gammon, Arthur H., 1 Washington Sq., Haverhill, Mass. "Gee-Bee."
 Gee Bee—See Gammon, Arthur H.
 Gammon, Arthur H.—See Soule Co.
 Gee Bee—See Soule Co.
 Gee-Bee—See Green Bay Supply Co.
 Gem—See Colgan Mfg. & Supply Co.
 Gold Medal—See Hoffman Co.
 Golden Gate Mfg. Co.—See Fessell's Laboratory.
 Golden Rod—See American Textile Mfg. Co.
 Golden Star Polish Mfg. Co., 815-23 E. 21st St., Kansas City, Mo. "Klean Shine."
 Grady Mfg. Co., 250-56 Ely Ave., Long Island City, N. Y. "National."
 Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
 Greenleaf Products Co.—See Farley & MacNeill.
 Grayhound—See Camden Chemical Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Brilliant Lustre." (See page 229.)
 Hallett & Co., H. M., Ludington, Mich. "New Life."
 Harbor Sales & Mfg. Co., 51 E. 42d St., New York, N. Y. "Slick-Shine."
 Harco—See Butler-Halley Co.
 Harvey Chemical Co., Wickliffe, O. "Lin-Lac."
 Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Autoglo." (See page 533.)
 Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal."
 Holbrook Co., 166 West End Ave., New York, N. Y.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Nugloss."
 Howard Dustless Duster Co., 390 Franklin St., Boston, Mass.
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
 Hy-Pol—See Adams & Elting Co.
 I. C. U.—See Livingston Co.
 Halsey—Doubleday & Co., 229-31 Front St., New York, N. Y.
 Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Auto-Gloss."
 Ingham's—See Perfection Polish Co.
 Instant Products Co., 21 Cambria St., Boston, Mass.
 Instant Products Co., 779 Genesee St., Buffalo, N. Y. "Life-O-Wood."
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.
 Jackels & Campbell Co., 1622 McGee St., Kansas City, Mo.
 Jaffa Co., 2409 Superior Viaduct, Cleveland, O.
 Jewel—See Wadsworth-Howland Co.
 Johnson & Son, S. C., 1013 16th St., Racine, Wis. "Auto-Lak."
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 K-K-K—See Killen Chemical Co.
 Kantmar—See Woodliffe Laboratories.
 Kellerman, I., 674 Ninth Ave., New York, N. Y. "Crystal."
 Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
 Keystone Polish Co., 8 Avon Ave., Newark, N. J.
 Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K."
 Kleen Shine—See Golden Star Polish Mfg. Co.
 Kleano—See Tay-Miller Mfg. Co.
 Lac-Mar Co., 1235 Tuscarawas St., E., Canton, O.
 Larkins Chemical Co., 150 Catalina Ave., Pasadena, Cal. "Oil of Delight."
 Le Doyen, Frank J., 337 Mangold St., Baltimore, Md. "Var-Noil."
 Lee Mfg. & Chemical Co., Wm. E., 633 Cypress Ave., Kansas City, Mo. "Varnishine."
 Liberty Chemical Works, 353 E. Illinois St., Chicago, Ill.
 Life-O-Wood—See Instant Products Co.
 Lin Lac—See Harvey Chemical Co.
 Liquid Veneer—See Buffalo Specialty Co.
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Sun-Glo."
 Lucas & Co., John, 133-30 Race St., Philadelphia, Pa. "Auto-Klean."
 Luster-O'all Co., 622 Hampshire St., Quincy, Ill.
 Lustre Mfg. Co., 162 W. Austin Ave., Chicago, Ill.
 Lynku Polish Mfg. Co., 916 Forbes St., Pittsburgh, Pa.
 Lyon & Healy, 52-58 Jackson Blvd., Chicago, Ill. "Zol."
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill. "Mac's."
 Mac's—See McGregory & Co.
 Majestic—See Suydam Co.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Marvin—See Imperial Oil Co.
 Mat's—See Weiss Polish Works.
 Meadowcroft Chemical Co., Saybrook, Conn. "Rite Brits."
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
 Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.
 Minard Co., Eames St., Framingham, Mass. "Ol-In-Ol."
 Mirrorlike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Mobo—See Stanley Co.
 Monarch—See Suydam Co.
 Monogram—See New York Lubricating Oil Co.
 Moore & Co., Benjamin, 331-33 Front St., Brooklyn, N. Y.
 Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Mooregloss."
 Mooregloss—See Moore Oil Refining Co.
 Morgan Mfg. Co., Court St., Keene, N. H. "Nugloss." (See page 755.)
 Mormalike Co., 416 Sherman St., Chicago, Ill.
 Motor Parts Co., Ambridge, Pa.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 National—See Grady Mfg. Co.
 National—See Rust-off Mfg. Co.
 National Chemical Co., Canal Fulton, O. "Quick-Shine."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Pioneer."
 National Soap Co., 1910 Franklin St., Detroit, Mich.
 New Metal Products Corp., Whipple Bldg., Birmingham, N. Y. "Filmist."
 New Life—See Hallett & Co.
 New Lustre—See Crum Mfg. Co.
 New Method Varnish Co., Realty Bldg., Elmira, N. Y. "Uncle Hiram's."
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 999—See Damon Mfg. Co.
 Nish—See Rath Mfg. Co.
 Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.
 Norwesco—See Northwestern Chemical Co.
 North State Polish Co., Piedmont Bldg., Charlotte, N. C. "U Can C."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)
 Noxal Polish Mfg. Co., 1238 Belmont Ave., Philadelphia, Pa.
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Body-Nu."
 Nugloss—See Morgan Mfg. Co.
 Nugloss—See Hollingshead Co.
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 O-Cedar—See Channel Chemical Co.
 O-Lustre Specialty Co., 1806½ Main St., Parsons, Kan.
 Oil of Delight—See Larkins Chemical Co.
 Oilsum—See White & Bagley Co.
 Ol-In-Ol—See Minard Co.
 Old English—See Boyle Co.
 On E-Z—See Sutorius Auto Top Co.
 Optimus Mfg. Co., 193 Hanover St., Boston, Mass.
 Outlook Co., 5513 Euclid Ave., Cleveland, O.
 Panol—See Panvar Co.
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Panol."
 Patterson-Sargent Co., E. 35th & St. Clair Sts., Cleveland, O. "B. P. S."
 Paul & Co., J. C., 330 Roscoe St., Chicago, Ill. "Burnishine."
 Peerless—See Columbus Varnish Co.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

- Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
- Perfection Polish Co., Waverly, N. Y. "Ingham's."
- Perkins-Campbell Co., Cincinnati, O. "Cleanit." (See page 115.)
- Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705.)
- Permatex—See Benoit, Constant A.
- Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Auto-Newer."
- Pioneer—See National Rubber & Specialties Co.
- Pioneer Mfg. Co., 10309 Harvard Ave., Cleveland, O. "Shino."
- Polac Co., 73 Tremont St., Boston, Mass.
- Polishem—See Ensign Refining Co.
- Poughkeepsie Utilities Corp., 38 Winnikee Ave., Poughkeepsie, N. Y. "Utility."
- Povar—See American Povar Corp.
- Pratt Mfg. Co., W. A., 1964 Broadway, New York, N. Y. "Clean-O-Shine."
- Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
- Pyn-Ol—See American Textile Mfg. Co.
- Queen City Specialty Co., Johnston Bldg., Cincinnati, O. "Esta-Bright."
- Quick-Shine—See National Chemical Co.
- Quickwork—See Standard Varnish Works.
- Rapid—See Shannon, T. R.
- Rath Mfg. Co., Hedley & Richmond Sta. Philadelphia, Pa. "Niah."
- Ray Chemical Co., 53 Halsey St., Newark, N. J. "Rayfinish."
- Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa.
- Rayfinish—See Ray Chemical Co.
- Re-Nu-R Products Co., 203 E. Lake St., Minneapolis, Minn.
- Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
- Red Line, Inc., Grand Rapids, Mich. (See page 667.)
- Refine Co., Sheboygan, Mich.
- Re-Nu—See Cincinnati Oil Works Co.
- Reflectal—See Billings-Chapin Co.
- Rents Co., C. J., Greenwood Bldg., Cincinnati, O.
- Reuss Polish Co., Pierce Bldg., Milwaukee, Wis.
- Revivo—See Heaney Mfg. Co.
- Rex—See Armiger Chemical Co.
- Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis. "E-Z-Kleen."
- Rie-Nie Re-Nu—See Dürkee-Atwood Co.
- Rite-Brite—See Meadowcroft Chemical Co.
- Roberts Co., C. F., 1713 Brush St., Detroit, Mich. "Splendola."
- Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "20th Century."
- Rodriguez, R. B., 56-58 Warren St., New York, N. Y. "Ezy Brite," "Simplex."
- Rogers Auto-Brite—See Detroit White Lead Works.
- Roglo—See Ross Gloss Co.
- Rome—See Howard Lubricants Co.
- Ross Gloss Co., Auburndale, Mass. "Roglo."
- Royal Mist—See Fairchild & Bro.
- Rub-On—See Auto Products Mfg. Co.
- Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "National."
- S. & B.—See Uno Mfg. Co.
- St. Cloud Drug Co., Seventh & Arch Sts., Philadelphia, Pa. "V-C."
- Sani-Mist Co., 16 Home St., New London, Conn.
- Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
- Satin Spray Co., 113 Lakeview Ave., Cambridge, Mass.
- Sawyer Oil Co., Howard B., 63 Long Wharf, Boston, Mass. "Blue Ribbon."
- Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-in-One."
- Shannon, T. R., 19 Lorraine St., Hartford, Conn. "Rapid."
- Shi-Nup Products Co., 1130 Main St., Racine, Wis.
- Shino—See Pioneer Mfg. Co.
- Shinauto Mfg. Co., 1423 N. Illinois St., Indianapolis, Ind.
- Simoniz—See Simons Mfg. Co.
- Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill. "Simoniz."
- Simplex—See Rodriguez, R. B.
- Slick-Shine—See Harbor Sales & Mfg. Co.
- Slikup—See Arnold, N. B.
- Sole Mfg. Co., 148 Chambers St., New York, N. Y. "Clean Shyne."
- Sparkler Mfg. Co., 108 Main St., Fairmount, Ind.
- Splendola—See Roberts Co.
- Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
- Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo." (See page 861.)
- Starclean—See Alder Chemical Co.
- Sterno Corp., New York, N. Y. (See page 229.)
- Straight Line Mfg. Co., 37 Thames St., New York, N. Y. "Superlustrate."
- Sun-Glo—See Lord Polish Co.
- Sunshine—See Thumb, E. W.
- Super-Gloss Mfg. Co., 1091 Mission St., San Francisco, Cal.
- Superlustrate—See Straight Line Mfg. Co.
- Sutherland & Co., P., 232 Milk St., Boston, Mass.
- Sutorius Auto Top Co., 621-23 Third Ave. E., Minneapolis, Minn. "On E-Z."
- Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch," "Majestic."
- T-M Gloss—See Tay-Miller Mfg. Co.
- Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "T-M Gloss," "Kleano."
- Thumb, E. W., 373 Orleans St., Chicago, Ill. "Sunshine."
- Tobey Furniture Co., 200 E. Grand Ave., Chicago, Ill.
- Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
- 20th Century—See Robertson Products Co.
- U Can C—See North State Polish Co.
- U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass.
- Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K."
- Uncle Hiram's—See New Method Varnish Co.
- Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill. "S. & B."
- Utility—See Poughkeepsie Utilities Corp.
- V-C—See St. Cloud Drug Co.
- Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Varni-Brite."
- Vaporine Co., 101 S. Wells St., Chicago, Ill.
- Var-Noll—See Le Doyen, Frank J.
- Varni-Brite—See Van Cleef Bros.
- Varni-Shine Co., Columbus, O.
- Varnishine—See Lee Mfg. & Chemical Co.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

Victor—See Fiebing Chemical Co.
 Victrolene Co., 39 Pearl St., Boston, Mass.
 Visco Motor Oil Co., 2104 Superior Ave. N. W., Cleveland, O.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Waxit Mfg. Co., Plymouth Bldg., Minneapolis, Minn.
 Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat's."
 Westfield Chemical Co., Main St., Westfield, Mass. "Zit."
 White & Bagley Co., Worcester, Mass. "Olkum." (See page 671.)
 Whitman, Bayard J., 300 Devonshire St., Boston, Mass. "Blue Stripe."
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Eclipse."
 Wilson Co., John V., 76 Brookline Ave., Boston, Mass.
 Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
 Wonder-Mist—See Cunningham & Berrien.
 Wondrelustre—See Drury Chemical Products Co.
 Woodtite Laboratories, Modesto, Cal. "Kantmar."
 Wonder Worker—See Hall-Thompson Co.
 Xint Mfg. Co., 209 Woodward St., Cincinnati, O.
 Zinsner & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."
 Zit—See Westfield Chemical Co.
 Zol—See Lyon & Healy.

POLISHES, BODY—See Polishes, Automobile Body

POLISHES, BRASS—See Polishes, Metal

POLISHES, Metal

A-1 Mfg. Co., Front & Wharton Sts., Philadelphia, Pa.
 A-O-K—See Ulrich & Co.
 A-S-K—See Dayton Polish Co.
 Acme Polish Co., 7227 Mt. Vernon St., Pittsburgh, Pa. "Ayrrolite."
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Shinaitite." (See page 363.)
 Ajaco—See Aisdorf Corp.
 Ajax—See Crowell Chemical Co.
 Aisdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
 Amale—See Sonneborn Sons.
 American Metal Polish Co., 89 Winalow Ave., W. West Somerville, Mass. "North Star," "Meyers."
 American Paint Products Co., 736 S. Wabash Ave., Chicago, Ill.
 Americus Products Mfg. Co., 627 W. Canfield Ave., Detroit, Mich.
 Anchor—See Hoffman Paint & Varnish Co.
 Anchor—See New England Oil, Paint & Varnish Co.
 Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
 Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
 Army & Navy—See Grady Mfg. Co.
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slukup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Shine-All."
 Ayrrolite—See Acme Polish Co.

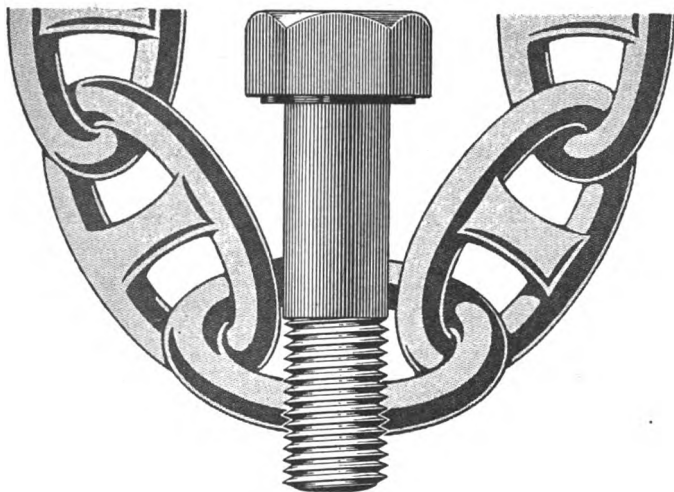
Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Be-Be-Co.—See Boston Blacking Co.
 Beacon—See Cincinnati Oil Works Co.
 Ben Hur Metal Polish Co., 206 E. Market St., Crawfordsville, Ind.
 Bertrams—See New Jersey Paint Works.
 Best of All—See Essex Paint & Chemical Co.
 Blue Ribbon—See International Metal Polish Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Bowman-Edson Co., M. K., 65-67 Dey St., New York, N. Y. "Edsonia."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Brass Nu—See Nu-Back Mfg. Co.
 Brett Dimmer Co., A. H., Mason City, Ia. "C. C."
 Bridgeport Wood Finishing Co., New Milford, Conn. "Metalshine."
 Brigstocke, M. K., 1027-29 Park St., Peekskill, N. Y.
 Briteline—See Harlem Supply Co.
 Burnishine—See Paul & Co.
 C. C.—See Brett Dimmer Co.
 Callery & Co., W. W., 188 36th St., Pittsburgh, Pa. "Winterton."
 Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."
 Campbell Glass & Paint Co., St. Louis, Mo. "Star."
 Car-Brite—See Lord Polish Co.
 Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
 Chemical Supply Co., 2450 Canal Rd., Cleveland, O.
 Cincinnati Oil Works Co., 525 Eggleston Ave., Cincinnati, O. "Beacon."
 Cleaner Mfg. Co., 2842 Olive St., St. Louis, Mo. "Follashine."
 Cleanola Co., Fulton Bldg., Pittsburgh, Pa. "Spe-De-Shyne."
 Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Crescent."
 Columbia—See Stevens, Frederic B.
 Crescent—See Colgan Mfg. & Supply Co.
 Crowell Chemical Co., 9 Oxford Terrace, Beverly, Mass. "Oxford," "Ajax."
 Cudahy Packing Co., 111 W. Monroe St., Chicago, Ill. "Parrot."
 Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Superba."
 Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
 Diamond Polish Co., Brown Bldg., Washington, Pa.
 Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.
 Dragon—See Paul & Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Edsonia—See Bowman-Edson Co.
 Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
 Ericka Mfg. Co., 882 Liberty St., Springfield, Mass. "Shineaul."
 Essex Paint & Chemical Co., Essex, Conn. "Best of All."
 Evans & Bro., 3514 Junata St., St. Louis, Mo.
 Fiebing Chemical Co., 328-40 Reed St., Milwaukee, Wis. "Lusterina."
 Flash Chemical Co., 160-70 Second St., Cambridge, Mass.
 G. W.—See Great Western Oil Co.

Everything is listed under the NOUN or principal word

POLISHES, Metal (Continued)

- Garratt-Callahan Co., 37 S. Clinton St., Chicago, Ill.
- German—See Sutherland & Co.
- Glittershine—See Grady Mfg. Co.
- Globe—See Raimess & Co.
- Gold Medal—See Hoffman Co.
- Golden Glitter—See Grady Mfg. Co.
- Golden Star Polish Mfg. Co., 315-23 E. 31st St., Kansas City, Mo.
- Goldshine—See Van Tillburg Oil Co.
- Grady Mfg. Co., 350-56 Ely Ave., Long Island City, N. Y. "Glittershine," "Scourer," "Army & Navy," "Golden Glitter," "Summerashine."
- Great Western Oil Co., 3555 E. 37th St., Cleveland, O. "G. W."
- Greyhound—See Camden Chemical Mfg. Co.
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Nick-E-Lo." (See page 225.)
- Harlem Supply Co., Knickerbocker Bldg., Baltimore, Md. "Briteline."
- Harris Oil Co., A. W., Providence, R. I. "Scourer." (See page 673.)
- Heaney Mfg. Co., 10-13 India Sq., Boston, Mass. "Revivo."
- Hinds & Coon, 124-26 Pearl St., Boston, Mass. "Ruby-Rub."
- Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal," "U. S."
- Hoffman Paint & Varnish Co., 8 Medford St., Boston, Mass. "Anchor."
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whis."
- I. C. U.—See Livingston Co.
- Imperial—See Rath Mfg. Co.
- Imperial Oil Co., Merchants Exchange, St. Louis, Mo. "Marvin."
- Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Metal-Brite."
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Jewel—See Wadsworth-Howland Co.
- Jifty—See Staedler, Chas.
- Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
- K-K-K—See Killen Kemical Co.
- Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
- Kettler Brass Mfg. Co., Spring & White Sts., Houston, Tex. "Qck Work."
- Killen Kemical Co., 403 E. Shiawassee St., Lansing, Mich. "K-K-K."
- Lee Mfg. & Chemical Co., Wm. E., 622 Cypress Ave., Kansas City, Mo.
- Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
- Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
- Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Lumino," "Car-Brite."
- Lumino—See Lord Polish Co.
- Lumo—See North American Polish Co.
- Lusterine—See Fiebing Chemical Co.
- Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Zee-Ko."
- McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill.
- McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass.
- Mac's—See McGregor & Co.
- Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
- Marvin—See Imperial Oil Co.
- Maxine—See Rexine Co.
- Metal-Brite—See Indianapolis Paint & Color Co.
- Metalshine—See Bridgeport Wood Finishing Co.
- Meyers—See American Metal Polish Co.
- Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
- Miller Oil Products Corp., Bloomfield, N. J.
- Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.
- Mirrolkie Mfg. Co., 203 Eighth St., Long Island City, N. Y.
- Mobo—See Stanley Co.
- Monarch—See Suydam Co.
- Moonshine—See Winn, Wm. R.
- Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O. "Moreshine."
- Moreshine—See Moore Oil Refining Co.
- Morgan Mfg. Co., Court St., Keene, N. H. "Morganbrite." (See page 755.)
- Morganbrite—See Morgan Mfg. Co.
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- National Rubber & Specialties Co., 4423-39 Chickering Ave., Cincinnati, O. "Pioneer."
- National Soap Co., 1910 Franklin St., Detroit, Mich. "Quick Work."
- New England Oil, Paint & Varnish Co., Everett, Mass. "Anchor."
- New Jersey Paint Works, Tremont & Wayne Sts., Jersey City, N. J. "Bartrams."
- Nick-E-Lo—See Hall-Thompson Co.
- Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.
- North American Polish Co., 1227 Superior Ave., Cleveland, O. "Lumo."
- North Star—See American Metal Polish Co.
- Northwestern Chemical Co., 755 State St., Marietta, O. "Norweseco." (See page 277.)
- Norweseco—See Northwestern Chemical Co.
- Noxal Polish Mfg. Co., 1233 Belmont Ave., Philadelphia, Pa.
- Nu-Back Mfg. Co., 212-15 S. Second St., St. Louis, Mo. "Brass-Nut."
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- O. H. M.—See Robertson Products Co.
- Oxford—See Crowell Chemical Co.
- Parker Refining Co., 1307 W. 11th St., Cleveland, O.
- Parrot—See Cudahy Packing Co.
- Patterson Lubricating Co., 114 Broad St., Boston, Mass.
- Paul & Co., J. C., 320 Roscoe St., Chicago, Ill. "Burnishine," "Dragon."
- Perfection—See Warren Refining & Chemical Co.
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
- Pioneer—See National Rubber & Specialties Co.
- Pioneer—See Northwestern Chemical Co.
- Polashine—See Cleaner Mfg. Co.
- Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
- Qck Work—See Kettler Brass Mfg. Co.
- Quick Work—See National Soap Co.
- Raimess & Co., 50 Ferry St., New York, N. Y. "Globe."
- Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."
- Raydo—See Ulrich & Co.
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Red Cross—See Robertson & Co.
- Reid Mfg. Co., W. W., 17 Caldwell St., Boston, Mass.
- Revivo—See Heaney Mfg. Co.
- Rex—See Armiger Chemical Co.
- Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis. "Maxine."

Everything is listed under the NOUN or principal word



The Strongest Link

The uniformly superior construction of present day automotive appliances permits of the use of only such materials as are consistently superior in their particular field.

Thus, we suggest the use of the Victor Product as the strongest link for binding together the several assemblies which make up the better automotive vehicle.

**VICTOR SCREW WORKS
DETROIT**

Please mention The Automobile Trade Directory

POLISHES, Metal (Continued)

Rie-Nie—See Durkee-Atwood Co.
 Robertson & Co., 1141 W. Madison St., Chicago, Ill. "Red Cross."
 Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "XX."
 Rogers—See Detroit White Lead Works.
 Ruby-Rub—See Hinds & Coon.
 Scoures—See Grady Mfg. Co.
 Scoures—See Harris Oil Co.
 Shinal—See Adams & Elting Co.
 Shine-All—See Arnstein, Geo. W.
 Shineaul—See Ericka Mfg. Co.
 Rhinite—See Adams & Elting Co.
 Skat Co., 791 Park St., Hartford, Conn.
 Slick-Shine Victory—See Harbor Sales & Mfg. Co.
 Solarine Co., 153-55 N. Carpenter St., Chicago, Ill.
 Solshine Mfg. Co., 17 Caldwell St., Boston, Mass.
 Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
 Spe-De-Shyne—See Cleanola Co.
 Spear's Sons Co., Alden, 140 Sixth St., Boston, Mass.
 Stedler, Chas., 190 Claremont Ave., Verona, N. J. "Jifty."
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo."
 (See page 861.)
 Star—See Campbell Glass & Paint Co.
 Stay-Bright Lacquer Co., 58 W. Washington St., Chicago, Ill.
 Summershine—See Grady Mfg. Co.
 Superba—See Curry Bros. Oil Co.
 Sutherland & Co., P., 233 Milk St., Boston, Mass. "German."
 Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch."
 Sweet, Charles F., 247 State St., Hartford, Conn.
 Syco—See Symonds Co.
 Symonds Co., Joseph H., Westfield, Mass. "Syco."
 Trafton Co., F. M., 176 Federal St., Boston, Mass.
 U. S.—See Hoffman Co.
 Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K." "Raydo."
 Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Warren Refining & Chemical Co., Cleveland, O. "Perfection."
 Whis—See Hollingshead Co.
 Winn, Wm. R., 143 Maiden Lane, New York, N. Y. "Moonshine."
 Winterton—See Callery & Co.
 Wonder Worker—See Hall Thompson Co.
 Woodison Co., E. J., 7415 St. Aubin St., Detroit, Mich.
 XX—See Robertson Products Co.
 Yale—See Rostand Mfg. Co.
 Zee-Ko—See Lynch, Alonzo K.

POLISHES, NICKEL—See Polishes, Metal

POLISHES, SILVER—See Polishes, Metal

POLISHING CLOTHS—See Wipers

POLISHING COMPOUNDS—See Compounds, Buffing and Polishing

PONTOONS, Seaplane

Hamilton Aero Mfg. Co., Milwaukee, Wis.
 Palmer-Simpson Corp., Saranac Lake, N. Y.
 Reliance Motor Boat Co., 297th St. & Harlem River, W., New York, N. Y.

POPPET VALVES—See Valves, Engine Poppet

PORCELAIN

Artistic Porcelain Co., Trenton, N. J.
 Empire China Works, 142-56 Green St., Brooklyn, N. Y.
 Frenchtown Porcelain Co., Trenton, N. J. (See page 739.)
 General Porcelain Co., East Liverpool, O.
 Hartford Faience Co., Hartford, Conn.
 Imperial Porcelain Works, Mulberry St. & New York Ave., Trenton, N. J.
 J. D.—See Jeffery-Dewitt Co.
 Jeffery-Dewitt Co., Butler Ave. & G. T. Ry., Detroit, Mich. "J-D."
 National Porcelain Co., Southard St., Trenton, N. J.

PORTABLE BUFFERS—See Drills, Electric Portable

PORTABLE BUILDINGS—See Garages

PORTABLE CRANES—See Cranes, Portable

PORTABLE CYLINDER REBORING TOOLS—See Tools, Portable Cylinder Reboring

PORTABLE DRILLS—See Drills, Electric Portable

PORTABLE ELECTRIC LAMPS—See Lamps, Electric Hand or Inspection

PORTABLE GARAGE GREASE GUNS—See Guns, Portable Garage Grease

PORTABLE GARAGES—See Garages, Portable

PORTABLE GRINDERS—See Drills, Electric Portable

PORTABLE HAND PUNCHES—See Punches, Portable Hand

PORTABLE MOTORS, MOTOR BOAT—See Engines, Motor Boat Outboard

PORTABLE POLISHERS—See Drills, Electric Portable

PORTABLE STEEL CRADLES—See Cradles, Steel Portable

PORTABLE VISES—See Vises, Special and Portable

PORTABLE VULCANIZERS—See Vulcanizers, Portable

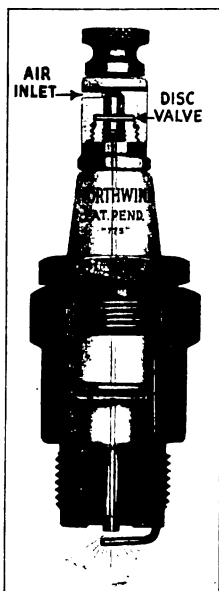
Everything is listed under the NOUN or principal word

PORCELAIN for SPARK PLUGS

PERFECT INSULATION

SEND SAMPLE OR DRAWING FOR QUOTATION

FRENCHTOWN PORCELAIN COMPANY
TRENTON, NEW JERSEY



NORTHWIND Ventilated Spark Plugs *Stay Clean*

It is impossible for a Northwind Spark Plug to foul.

At the Brooklyn Polytechnic Institute they tried deliberately to make a Northwind foul by heavily coating the gap with lubricating oil and lamp black.

With the plugs in this condition, the motor started on the third turn. Other plugs were similarly treated but the motor would not start.

Yet the construction of the Northwind is very simple. This is why it will never foul.

The center electrode is hollow. On every suction stroke, a little air is taken in through a tiny hole at the top, passes through the center electrode and is blown out in a powerful jet at the bottom, right over the sparking points.

When you think what this plug will mean to the car owners in your town, you will realize that it is the plug you should have in stock.

Already used by many factory service stations and by manufacturers.

Write us today for our terms to the trade.

There is a NORTHWIND SUPER-SPARK PLUG for every engine.

Retail Price, \$1.50

NORTHWIND SPARK PLUG CORP.
42 W. 39th Street New York City

OVERSIZE PISTONS OVERSIZE PISTON RINGS

WRIST PINS—GEARS—BRONZE BUSHINGS
CYLINDERS REGROUND

Our Specialty for 10 Years

MODERN MACHINERY—PROMPT DELIVERY

THE VULCAN BRAZING AND MACHINE COMPANY
2126-28-30 Race St. Philadelphia, Pa.

Please mention The Automobile Trade Directory

POWER HAMMERS—See **Hammers, Power**

POWER TRANSMITTING ATTACHMENTS—See **Attachments, Power Transmitting**

PRECISION LATHES—See **Lathes, Bench**

PRESERVERS, Aviators' Life

Ever-Warm—See **National Life Preserver Co.**
Danasilk—See **Robinson-Rodgers Co.**

Natural Life Preserver Co., 11 Broadway, New York, N. Y. "Ever-Warm."

Robinson-Rodgers Co., 27-33 N. J. R. R. Ave., Newark, N. J. "Danasilk."

PRESSED STEEL AXLE HOUSINGS—See **Housings, Pressed Steel**

PRESSED STEEL BRAKE DRUMS—See **Drums, Brake**

PRESSED STEEL FAN PULLEYS—See **Pulleys, Pressed Steel Fan**

PRESSED STEEL FRAMES—See **Frames, Pressed Steel**

PRESSED STEEL HUB FLANGES—See **Flanges, Hub**

PRESSED STEEL PARTS—See **Stampings**

PRESSED STEEL STEP HANGERS—See **Hangers, Pressed Steel Step**

PRESSES, Arbor

Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.

Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.

Bartlett, Edwin E., 41 Crown St., Nashua, N. H. "Greenard."

Bertschy-Hamilton Mfg. Co., 1954 Telegraph Ave., Oakland, Cal. "Push and Pull."

Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Columbia Mfg. Co., Belleville, Ill.

Crane Fuller Co., 54 Lake St., Arlington, Mass.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Ekers-Turk Mfg. Co., Pipestone, Minn.

Greb Co., 195 State St., Boston, Mass. (See page 747.)

Geier Co., P. A., 540 E. 105th St., Cleveland, O. (See page 561.)

Greenard—See **Bartlett, Edwin E.**

Hydraulic Press Mfg. Co., Mt. Gilead, O.

Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O.

M. E. C.—See **Manufacturers Equipment Co.**

Manley Mfg. Co., York, Pa. (See page 317.)

Manufacturers Equipment Co., Waller Ave. & Fillmore St., Chicago, Ill. "M. E. C."

Metalwood Mfg. Co., 3450 Wight St., Detroit, Mich.

Mills Mfg. Co., Sabina, O.

Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.

Naperville Machine Co., Naperville, Ill. "Perfection."

Nicholson & Co., W. H., 12 Oregon St., Wilkes-Barre, Pa.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Perfection—See **Naperville Machine Co.**

Post Garage & Repair Shop, Amos Church St., Catskill, N. Y.

Push and Pull—See **Bertschy-Hamilton Mfg. Co.**

Watson-Stillman Co., 198 Fulton St., New York, N. Y.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

Wilmarth & Morman Co., 1179 Monroe Ave. N. W., Grand Rapids, Mich.

Wilson, K. R., 10-18 Lock St., Buffalo, N. Y. (See page 247.)

PRESSES, Bench Straightening

Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.

Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.

Continental Auto Parts Co., 1907 E. 17th St., Columbus, Ind. (See page 79.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.

Geier Co., P. A., 540 E. 105th St., Cleveland, O. (See page 561.)

Lourie Mfg. Co., Harvard Pk., Springfield, Ill.

Plets & Sons, Carl, 717 Sycamore St., Cincinnati, O.

Springfield Machine Tool Co., Southern Ave. & P. C. & St. L. Ry., Springfield, O.

Towley Co., John T., Gest & Evans Sts., Cincinnati, O.

Watson-Stillman Co., 198 Fulton St., New York, N. Y.

PRESSES, BROACHING—See **Machines, Broaching**

PRESSES, Bushing Swedging

Burr & Sons, J. T., 429 Kent Ave., Brooklyn, N. Y.

Greb Co., 195 State St., Boston, Mass. (See page 747.)

PRESSES, CRANKSHAFT STRAIGHTENING—See **Presses, Bench Straightening**

PRESSES, DEALERS IN—See **Machinery, Dealers in**

PRESSES, FORGING—See **Presses, Arbor**

PRESSES, RIM—See **Presses, Truck Rim Applying**

PRESSES, Storage Battery Plate

(For straightening bent or buckled plates or forcing the active materials into place)

Ambu—See **American Bureau of Engineering.**

American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 659.)

PRESSES, STRAIGHTENING—See **Presses, Bench Straightening**

Everything is listed under the NOUN or principal word

THE**WEAVER****20-TON
FORCING
PRESS****For the Garage**

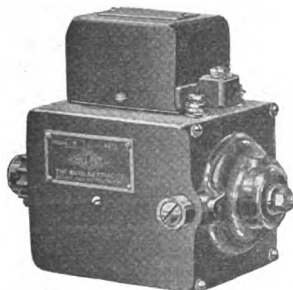
The Machine Shop, the Electric Shop, or any other shop requiring a forcing press of maximum or minimum pressure. Write for a complete description and our latest catalog of Weaver Garage Equipment.

WEAVER MANUFACTURING CO.**2177-79 So. 9th****Springfield, Illinois****Truck****Tractor**

Electric Lights Without Battery

The Nicolite No-Battery System can be used on any make of Truck or Farm Tractor. Any good mechanic can make installation in from four to six hours.

The truck or tractor owner of today demands equipment that will give him twenty-four hour-a-day service when he needs it. The Nicolite No-Battery System is the answer. Heavy duty vehicles shake batteries to pieces. This System gives powerful light without that expense and trouble. Can be used with a battery if needed. Nothing else like it. Fully guaranteed. Lowest initial cost and no up-keep expense. Price is right—investigate.



Made Especially for Heavy Duty Use

The Nicolite System is not just an ordinary motor car system adapted, but is built especially for this heavy duty use. Will stand the abuse the average truck or tractor receives. We can supply installation for practically any job. The work can be done by any good mechanic. Complete information on request.

Nelson J. Quinn Company
Toledo, Ohio

ONE-HAND-Y DRILL

Weights only three pounds complete—drills one-quarter inch holes or smaller in wood or metal. Also grinds, polishes, etc. Write for details.

RHY-BON ELECTRIC COMPANY
326 W. Madison St., Chicago



Please mention The Automobile Trade Directory

PRESSES, Tire

Elmes Engineering Works, Chas. F., 235 N. Morgan St., Chicago, Ill.
 Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.
 Hydraulic Press Mfg. Co., Mt. Gilead, O.
 Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
 Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa.
 Watson-Stillman Co., 198 Fulton St., New York, N. Y.

PRESSES, Truck Rim Applying

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.

PRESSINGS, METAL—See Stampings**PRESSURE CONTROLLERS, VULCANIZER—See Controllers, Vulcanizer Steam Pressure****PRESSURE LUBRICATORS—See Lubricators, Pressure****PRESSURE REGULATORS—See Regulators, Acetylene****PRESSURE SYSTEM TIRE CONNECTIONS—See Connections, Air System Tire****PRESSURE OR REDUCING VALVES—See Regulators, Tank Pressure****PREVENTERS, GLARE—See Dimmers, Headlight****PREVENTERS, RUST—See Compounds, Rust Preventing and Removing****PRICK PUNCHES—See Punches, Center Prick and Drift****PRIMARY CABLE—See Wire, Insulated****PRIMER BUSHINGS—See Bushings, Starter or Primer Attaching****PRIMERS, Aircraft Wood and Metal**

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
 Valspar—See Valentine & Co.

PRIMERS, Engine

(See *Heaters, Mixture; also Mixers, Fuel; also Starters*)

A-V-G.—See Cox Brass Mfg. Co.
 B. & L.—See Van Buren Co.
 Bailey Co., W. J., Newark, N. J. "C. B."
 Bay State Pump Co.—See Shultis Automotive Corp.
 Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
 Bintliff-Laing Co.—See Van Buren Co.
 Bourse—See Randall-Falchney Co.
 Buckeye—See Central Brass & Fixture Co.
 C. B.—See Bailey Co.

Carleton Co., 170 Summer St., Boston, Mass. "Master."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Colonial Auto & Supply Co., 101 W. 66th St., New York, N. Y.

Copley—See Shultis Automotive Corp.

Cox Brass Mfg. Co., Albany, N. Y. "A-V-G." (See page 171.)

De-Roy Accessories Co., 327 Main Ave. W., Spokane, Wash.

Detroit Modern Mfg. Co., 22-29 Woodward Ave., Detroit, Mich. "Sure-Shot."

E. Z. Hickey—See Angola Electric Mfg. Co.

Eck Vapor & Primer Co., 12 Vick Pk., Rochester, N. Y.

Engineering Equipment Co., State Life Bldg., Indianapolis, Ind.

Hagstrom Bros. Mfg. Co., Lindsborg, Kans.

Ideal Auto Primer Corp. of Los Angeles, 705 1/2 W. Eighth St., Los Angeles, Cal.

Imperial Brass Mfg. Co., 1224 W. Harrison St., Chicago, Ill. "Prime-ur." (See page 177.)

Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La.

Jorgensen Mfg. Co., Waupaca, Wis. (See page 743.)

Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.

Master—See Carleton Co.

Master Primer Co., 130 E. Larned St., Detroit, Mich. (See page 745.)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass. "Victory."

Peru Brass & Mfg. Co., Peru, Ind.

Prima—See Turner Brass Works.

Prime-ur—See Imperial Brass Mfg. Co.

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Randall-Falchney Co., 76 Atherton St., Boston, Mass. "Bourse."

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Copley.")

Smith, Fred, 56 W. Park Pl., Stamford, Conn.

Sure-Shot—See Detroit Modern Mfg. Co.

Sure Start Primer Co., 18 W. 34th St., New York, N. Y.

Turner Brass Works, Sycamore, Ill. "Prima." (See page 177.)

Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. (Sales Department for Bintliff-Laing Co., Plainfield, N. J. "B. & L.")

Victory—See Perkins Appliance Co.

Walker & Co., W. T., 11 Pemberton Sq., Boston, Mass.

PRIMERS, Engine, for Fords

(See also *Heaters, Mixture; also Mixers, Fuel; also Starters*)

B. & L.—See Van Buren Co.

Bay State Pump Co.—See Shultis Automotive Corp.

Bintliff-Laing Co.—See Van Buren Co.

Copley—See Shultis Automotive Corp.

Gould Mfg. Co., Seneca Falls, N. Y.

Henes Sales Corp., 463 Deming Pl., Chicago, Ill.

Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

JORGENSEN

VAPOR PRIMER

The Jorgensen Vapor Primer may be used on any type of motor—automobile, truck, tractor, marine or stationary engine. It is strictly mechanical in operation and will vaporize any grade of fuel at any temperature.



Fig. 1

Fig. 1 shows the connection used when the car is equipped with a vacuum tank. Fits any style of vacuum tank.

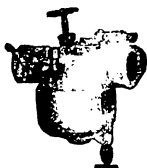


Fig. 2

Fig. 2 shows the special connection for the Ford car. It replaces the regular one that connects the gas line to the carburetor.



Fig. 3

Fig. 3 shows the connection for obtaining the gas supply for the primer by cutting into the line leading to the carburetor. This connection furnished for 1/4 inch, 3/8 inch or 1/2 inch O.D. Tubing.



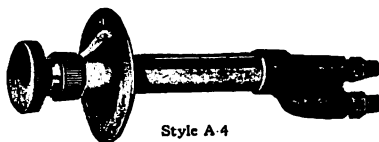
Style A-2

May be installed on any type of metal dash. Especially recommended to manufacturers for factory installation.



Style A-3

For installation on trucks or cars that have no instrument board. Also used on the earlier model Ford cars.



Style A-4

May be used with either metal or wood instrument boards. The most popular type for installation by garage and repairmen.

We also manufacture a complete line of high-grade machined brass motor fittings—Sediment Traps, Pet-Cocks, Priming Cups, etc., also Motor Tappets.

Jorgensen Mfg. Co., Waupaca, Wis.

Please mention The Automobile Trade Directory

PRIMERS, Engine, for Fords (Continued)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

J. & B. Mfg. Co., Pittsfield, Mass. (See page 949.)

Jorgensen Mfg. Co., Waupaca, Wis. (See page 743.)

King, W. C., 911 Sargent St., Litchfield, Ill.

Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.

Master Primer Co., 130 E. Larned St., Detroit, Mich. (See page 745.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Peru Brass & Mfg. Co., Peru, Ind.

Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Copley.")

Smith, Fred, 56 W. Park Pl., Stamford, Conn. Sure Start Primer Co., 18 W. 34th St., New York, N. Y.

T-R—See Tolman-Reeve Engineering Corp.

Tolman-Reeve Engineering Corp., 3104 Michigan Ave., Chicago, Ill. "T-R."

Turner Brass Works, Sycamore, Ill. (See page 177.)

Van Buren Co., G. B., 522 Fifth Ave., New York, N. Y. (Sales Department for Bintliff-Laing Co., Plainfield, N. J. "B. & L.")

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

PRIMING CUPS—See Cups, Spring Key Priming

PRIMING FLUIDS—See Fluids, Priming

PRIMING PLUGS FOR FORDS—See Plugs, Special

PRINTING MACHINES, BLUE—See Machines, Blue Printing

PROPELLER BLADE SHAPERS, AIRCRAFT—See Machines, Aircraft Propeller Blade Shaping

PROPELLER HUB BOLTS, AIRCRAFT—See Bolts, Aircraft Propeller Hub

PROPELLER HUB BORERS—See Machines, Aircraft Propeller Hub Boring

PROPELLER HUB BORING MACHINES—See Machines, Aircraft Propeller Hub Boring

PROPELLER HUB FLANGES, AIRCRAFT—See Hubs, Aircraft Propeller

PROPELLER HUBS, AIRCRAFT—See Hubs, Aircraft Propeller

PROPELLER SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

PROPELLER SHAFTS—See Shafts, Propeller

PROPELLER TOOTHING MACHINES, AIRCRAFT—See Machines, Aircraft Propeller Tothing

PROPELLER TURNING LATHES, AIRCRAFT—See Lathes, Aircraft Propeller Turning

PROPELLER VISE STANDS—See Stands, Aircraft Propeller Vise

PROPELLER WHEELS, MOTOR BOAT—See Wheels, Motor Boat Propeller

PROPELLERS, Aircraft Wood

American Sash & Door Co., 16th St. & Bellefontaine Ave., Kansas City, Mo.

Astoria Veneer Mills & Dock Co., 347 Madison Ave., New York, N. Y.

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

Doyle, W. A., Rutherford & Marion Sts., Trenton, N. J.

Flottorp Mfg. Co., 4611 W. 12th St., Chicago, Ill.

Halvorsen—See U. S. Products Corp.

Hamilton Aero Mfg. Co., Milwaukee, Wis.

Hartzell, Geo. W., Piqua, O. "Liberty."

Jacuzzi Bros., 1450 San Pablo Ave., Berkeley, Cal.

Lang Propeller Co. of America, 505 Fifth Ave., New York, N. Y.

Liberty—See Hartzell, Geo. W.

Marble Chair Co., E. L., Bedford, O.

Ostergaard Aircraft Works, 3215 W. Lake St., Chicago, Ill.

Peck & Co., Hardman, New York, N. Y.

Stone Mfg. Co., 2623 Olive St., St. Louis, Mo. "Supreme."

Supreme—See Stone Mfg. Co.

Tenny & Co., Dudley Lee, 144 Water St., New York, N. Y.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

West Woodworking Co., 308-24 N. Ada St., Chicago, Ill. "Westmore."

Westmore—See West Woodworking Co.

PROPELLERS, MOTOR BOAT—See Wheels, Motor Boat Propeller

PROPELLERS, SHAFT—See Mills, Dry Shaft Bearing End for Fords

PROPS OR SUPPORTS, CAR—See Jacks, Tire Saving

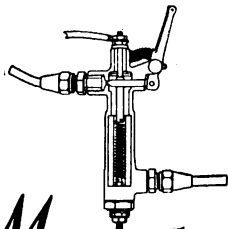
PROTECTORS, Airplane Rubber Fuselage Wire

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Everything is listed under the NOUN or principal word



In the familiar Electric Flat-iron is found the basic heating principle of the Master Electrical Primer. In the Master Electrical Primer the fuel passes around a coil which is heated from the car battery and which quickly raises temperature of gasoline to the point where ignition is instantaneous.



Master
ELECTRICAL PRIMER
MASTER PRIMER COMPANY
130 E. Larned St. Detroit, Mich.



The Dual Truck-Tractor

An epoch-making invention. Supreme in its field.

Will easily pull three-bottom plow. Can plow closer to the corner than with a horse.

Will do all farm hauling. Makes 15 miles an hour as a truck running on rubber tires, 3 miles an hour as a tractor.

Combined in this one machine is First: The most efficient Tractor ever made. Second: A serviceable runabout. Third: A power plant. Fourth: A truck for all pulling purposes.

Employs a low intermediate, direct and reverse drive in either truck, tractor or belt drive. Investigate!



USME
TRADE MARK

Spare Parts for Ford and Chevrolet Cars

A Few Good Reasons Why You Should Carry the USME Line

QUALITY: Real value backed by the guarantee of an organization who are proud of the merchandise they manufacture.

SERVICE: We embody everything which goes to make up the modern definition of this term.

PRICE: Commensurate with the quality and service, our prices are always right.

We sell Jobbers exclusively. Write for our Catalogue "A" and Jobbers' net list. This will give you full information regarding USME axles, drive shafts, spindle bodies, springs, gears, bolts or nuts, stampings, etc.

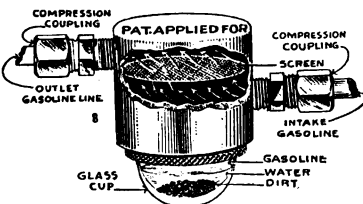
U. S. Metal Goods Company

No. 5211 Euclid Avenue
Cleveland, Ohio

DEME

DEME

THE WETHERHOLT VISIBLE GASOLINE PURIFIER



For Cars, Trucks, Tractors and All Gasoline Engine Installations.

The Purifier keeps all dirt, rubber, lint, rust, water or any foreign substance out of the carburetor.

Increases Engine Efficiency

Can be attached by any one—any place in the gasoline line—no threading or soldering necessary. Can also be attached to dash in sight of driver.

DEVICE ABSOLUTELY GUARANTEED

List Price Each, \$3.50

Jobbers! Dealers!—Write for Discounts

WRO. BY
AUTOMOTIVE MFG. CORPORATION
CHICAGO Strauss Bldg. ILLINOIS

Please mention The Automobile Trade Directory

PROTECTORS, Coil Box, for Fords

(Metal Shield to prevent rain or dampness reaching Coil Box or Terminal)

- A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Bone-Dry."
 Bone-Dry—See American Auto Products Co.
 Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 983.)
 Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Al-Dry."
 Hadco—See Hadden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco." (See page 821.)
 Hart-Bell Co., 1926 Broadway, New York, N. Y.
 Hettrick Mfg. Co., Toledo, O.
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."
 Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo.
 McKay-Grubb Rubber Co., 1110 Hennepin Ave., Minneapolis, Minn. "Russell."
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich.
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Sentry."
 Miller Mfg. Co., 905 Gates Ave., Brooklyn, N. Y.
 Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
 Paragon—See Doerner & Co.
 Perkins-Campbell Co., Cincinnati, O. (See page 115.)
 Powers Mfg. Co., Waterloo, Ia. (See page 551.)
 R. C. Fabric Co., 1333 Bedford Ave., Brooklyn, N. Y.
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Russell—See McKay-Grubb Rubber Co.
 Safe-T-First Gasket Co., 316 W. 134th St., New York, N. Y.
 Sentry—See Mil-Mac Mfg. Co.
 Soo-Al-Dry—See Esner Mfg. Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Sure-Fit—See Hodes-Zink Mfg. Co.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.

PROTECTORS, CUFF—See Protectors, Sleeve**PROTECTORS, Door**

(Leather or fabric pads to protect the finish of the door)

- B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 983.)
 Campbell—See Perkins-Campbell Co.
 Carroll Mfg. Co., 683 Mass. Ave., Arlington, Mass.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Fitzwell—See Niagara Fabric Mfg. Co.
 Hopewell Bros., Watertown, Mass. (See page 641.)
 Lockwood Mfg. Co., Kansas City, Mo.
 McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 309 and 983.)
 Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 327.)
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

PROTECTORS, EYE—See Goggles, Mechanics'**PROTECTORS, FENDER—See Covers, Fender****PROTECTORS, Sleeve and Cuff**

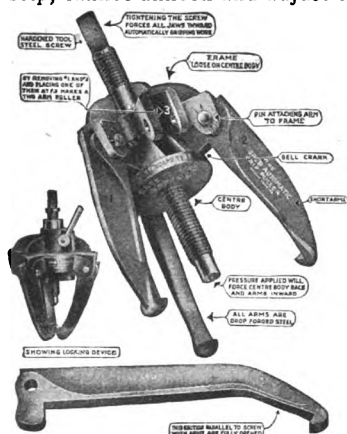
- Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Bemco—See B. E. Mfg. Co.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Fitzwell—See Niagara Fabric Mfg. Co.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Everything is listed under the NOUN or principal word

GREB AUTOMATIC GRIP PULLER

BEACH PATENT

"The One Best Bet" in Wheel, Gear and Bearing Pullers. Combinations of two or three jaws. Quick, Strong, Durable, Efficient and Simple. Positive Grip, cannot unhook and adjust to work instantly.



GREB AUTOMATIC GRIP PULLER

No. 1 Senior Size—Designed for heavy work—a one-man Puller with a locking device. Capacity 1 to 18 in. Complete with two sets of jaws, 7 in. jaws open to 10 in., and 12 in. jaws to 18 in. Screw of hardened steel, 1 in. diameter, 14 in. long. (See Arbor Press Base Attachment.) Shipping weight, 37 lbs.

Price, complete \$25.00
Canadian \$35.00

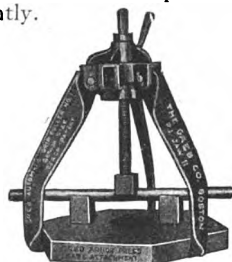
No. 2 Junior Size—Designed for all types of motors. Will remove magneto and pump shaft gears, couplings, etc. An efficient tool for all light work. Capacity 1 to 7 in. Complete with two sets of jaws, 3½ in. jaws open to 4 in. and 6 in. jaws to 7 in. Screw of hardened steel, 9/16 in. diameter, 7½ in. long. (See Bearing and Race Attachment.) Shipping weight, 5 lbs.

Price, complete \$12.00
Canadian \$18.00

No. 3 Intermediate Size—Designed to pull the average motor gears, such as timing, pinion, transmission, differential, and crank shaft gears, cardan and universal joints, pulleys and for general work. Capacity 1 to 12 in. Complete with two sets of jaws, 5 in. jaws open to 8 in., and 9½ in. jaws to 12 in. Screw of hardened steel, ¾ in. diameter, 10 in. long. (See Gear Attachments.) Shipping weight, 17 lbs.

Price, complete \$18.00
Canadian \$28.00

*Any
jobber
will
supply
you*



Greb Arbor Press Base—Designed to be used with the three long jaws of No. 1 Puller. Comes complete with two V Blocks and one V Cap. Makes desirable equipment for pressing of gears, bushings, bending pipes, straightening shafts, etc. It is a good Bench Plate. Width, 14 in.; Depth, 2 in.; Diameter of Center Opening, 3½ in. Weight, approximately, 60 lbs.

Price, Base, complete \$18.00
Canadian \$25.00



Greb Bearing and Race Attachment for No. 2 Puller has a Knife edge and can be forced behind magneto, electrical generator, and self-starter bearings and races where it is impossible for the jaws of any Puller to be attached. This attachment, when used back of small gears and bearings, not only saves them but the ends of the Puller jaws as well. Capacity—Bearings and Races up to and including 2 in.

Price, complete \$4.00
Canadian \$6.00

Greb Gear Attachment for all sizes of Greb Pullers has a ¼ in. edge and can be forced behind gears where there is little or no room. This attachment, when used back of small gears, furnishes something for the jaws to get hold of and as it lays flat against the back of the gear it permits an even pull. Made in two sizes. Small size has capacity to take gears up to 3 in. on its front and 4½ in. on its back.

Price, complete .. \$5.00 Canadian .. \$7.00
Large size has capacity to take gears up to 4 in. on its front and 6 in. on its back.
Price, complete \$6.00 Canadian \$8.00

WRITE FOR 10-DAY TRIAL PROPOSITION

OTHER GREB PRODUCTS

Greb Automatic Grip Extractors Greb Rear Axle Presses Greb Rim Tool Greb Solder Cement
Greb Garage Presses Greb Tire Remover Greb Windshield Glass
Grebford Extension Unit Greb Process Bushing Press

THE GREB COMPANY, Inc.

195 State St., Boston, Mass.

MANUFACTURERS OF GARAGE TOOLS AND EQUIPMENT

Please mention The Automobile Trade Directory

PROTECTORS, SPARK PLUG—See Protectors, Coil Box for Fords

PROTECTORS, Spark Plug Point

(Small metal shields or protectors to be attached to spark plug before it is placed in the cylinder to prevent the oil from fouling the points)

Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."

W. W.—See Ballard-Sutcliffe Co.

PROTECTORS, TIMER WIRE GUARD—
See Guards, Timer Wire for Fords

PROTECTORS, TIRE—See Treads, Detachable; also Shoes, Inner Tire

PUBLICATIONS—See Books and Periodicals

PULLERS, Axle Bearing Sleeve, for Fords

American—See Fairbanks Co.

C. & M.—See Sells & Co., O. P.

Cantrell-Miller Machine Works—See Sells & Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Hinckley-Myers Co., Water St., Jackson, Mich.

Koch, Nicholas E.—See Rosier-Howard Corp. Railway Specialty Co., Atchison, Kans. "Rysco."

Rosier-Howard Corp., Hutchinson, Kans. (Sole Distributors for Nicholas E. Koch, Los Angeles, Cal.)

Rysco—See Railway Specialty Co.

Sells & Co., O. P., 1834 Broadway, New York. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal. "C. & M.")

Service Station Equipment Co.—See Fairbanks Co.

PULLERS, Axle Housing, for Fords

(Tool for separating propeller shaft housing from differential housing)

Handee—See Racine Handy Mfg. Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Universal Mfg. Co., Racine, Wis.

PULLERS, BATTERY CONNECTOR—See Tools, Storage Battery Repair

PULLERS, Bearing

Campbell Auto Works, 238-40 N. El Dorado St., Stockton, Cal. (See page 749.)

Durham Co., P. J., 244 W. 49th St., New York, N. Y.

PULLERS, BUSHING, FOR FORDS—See Extractors, Bushing

PULLERS, CAR—See Winches and Blocks

PULLERS, Cotter Pin

American Cotter Pin Co., Park Bldg., Pittsburgh, Pa. "May's."

Auto Forge Sales Co., 80 King Ave., Columbus, O.

Braunsdorf-Mueller Co., 205 Madison St., Ellsabeth, N. J.

Brewer Tichener Corp., Cortland, N. Y. (See page 573.)

Buffum Tool Co., Louisiana, Mo. (See page 395.)

C & R—See Northwestern Machine Corp. Carver Tool Works, Spring Valley, N. Y.

Chapin-Stephens Co., Pine Meadow, Conn. "Elmore."

Clinton Machine Works, 460 High St., Clinton, Mass.

Cushman Co., Inc., Champaign, Ill. (See page 479.)

E-Z—See Syracuse Wrench Co.

Elmore—See Chapin-Stephens Co.

Kraemer & Co., Newark, N. J. (See page 1001.)

Marcy Tool Works, Putnam, Conn.

May's—See American Cotter Pin Co.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 1011.)

Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo. "C & R."

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Stortz & Son, John, Philadelphia, Pa.

Syracuse Twist Drill Co., 336 Grape St., Syracuse, N. Y.

Syracuse Wrench Co., Syracuse, N. Y. "E-Z"

Vichek Tool Co., Cleveland, O.

West Haven Mfg. Co., 23 Elm St. (W. Haven), New Haven, Conn.

PULLERS, Gear and Wheel

American—See Fairbanks Co.

Braunsdorf-Mueller Co., 205 Madison St., Ellsabeth, N. J.

Crane Puller Co., 54 Lake St., Arlington, Mass.

F & W—See Lewis & Milligan.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Greb Co., 195 State St., Boston, Mass. (See page 747.)

Kerschbaum, M. E., New York, N. Y.

Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind. "F & W."

Little Giant—See Premier Electric Co.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Little Giant."

Service Station Equipment Co.—See Fairbanks Co.

Shepherd—See Zim Mfg. Co.

Stenberg Mfg. Co., John E., 3238 Craft St., Chicago, Ill.

Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "Shepherd."

Everything is listed under the NOUN or principal word

Plain Extractor



CAMPBELL

Bearing Pullers and Race Extractors simplify the removal of bearing cones and races on Magneto Armature Shafts and other electrical equipment. Endorsed by best mechanics and Magneto Manufacturers. Description and prices on request. Discount to Jobbers and Dealers.

CAMPBELL AUTO WORKS

238-240 N. El Dorado St.,

Stockton, Cal.

Bearing Puller



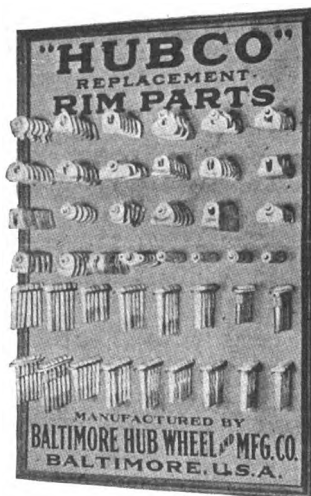
Glownite Auto Watch
Shows Time
In Darkness

Vibration Proof
Sturdy-Handsome
Attach it yourself

Made by
J.F. Mansfield
9 Madison Ave.
New York

Price \$5.00

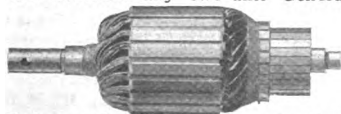
**Jobbers Write for
Particulars and Samples**



The display board as shown above is made of wood and lithographed tin handsomely finished in Red, White and Blue. It is 24 by 36 inches and contains 308 pieces. Complete, ready for shipment, wholesale price \$31.60. Total of parts to car owner \$47.40. No unsalable parts. Supplies demanded for 98% of cars in use. Write us to-day—get a "Hubco" in time for the rush of spring business.

Send Us Your Electrical Repair Work

We overhaul any two-unit Generator or Starting Motor for \$5.00 plus parts.



We rewind any two-unit Generator Armature for \$5.00.

We overhaul any Ford Generator or Starting Motor for \$3.00 plus parts.

We rewind any Ford Armature for \$3.00.

We repair Ford Cutouts for \$0.65.

Only genuine Ford parts used. All Ford work shipped the same day it is received. Our work is all done by factory trained mechanics and our plant complete in every detail. All work guaranteed.

A trial will convince you that our service will save you many dollars.

U. S. Auto Supply Company

3845-49 So. Wabash Ave., Chicago, Ill.

Please mention The Automobile Trade Directory

PULLERS, Gear, for Fords*(For removing timing gears and generator pinions.)*

Hinckley-Myers Co., Water St., Jackson, Mich.

PULLERS, REAR AXLE SLEEVE FOR FORDS—See Pullers, Axle Bearing Sleeve**PULLERS, SLEEVE BEARING FOR FORDS—See Pullers, Axle Bearing Sleeve****PULLERS, WHEEL—See Pullers, Gear****PULLERS, Wheel, for Fords***(For removing rear wheels)*Am-Pe-Co Sales Co., Marshalltown, Iowa.
(See page 487.)

Baltimore Hub-Wheel & Mfg. Co., Baltimore, Md. "Hubco." (See page 749.)

Benford Auto Products, Inc., Mt. Vernon, N. Y. (See page 945.)

Buckeye—See Central Brass & Fixture Co.

C. & M.—See Sells & Co., O. P.

Cantrell-Miller Machine Works—See Sells & Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Cooper Mfg. Co.—See Fulton Co.

E. G.—See Grossman Mfg. Corp.

Easy-Off—See Honn, Peter.

Edelman & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Efemco—See Foster, Merriam & Co.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)

Fulton Co., Dept. S., 75th & National Ave., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Iowa.) (See page 1022.)

Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich. "Easy-Off."

Hubco—See Baltimore Hub-Wheel & Mfg. Co.

Humboldt—See Republic Auto Parts Co.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Sells & Co., O. P., 1834 Broadway, New York, N. Y. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal.) "C. & M."

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

PULLEY COVERS, CORK—See Covers, Cork Pulley Rim**PULLEYS, CLUTCH—See Pulleys, Tractor Friction Clutch****PULLEYS, FAN—See Pulleys, Pressed Steel Fan****PULLEYS, FRICTION CLUTCH—See Pulleys, Tractor Friction Clutch****PULLEYS, Pressed Steel, Fan***(See also Fans, Radiator)*Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich.
(See page 1015.)**PULLEYS, Tractor Friction Clutch**

Brown Clutch Co., 1737 S. Camp St., Sandusky, O.

Havana Mfg. Co., Havana, Ill.

Herken, Jr.—See Minster Machine Co.

Hinderer Bros. Co., 20th St. & Wheeling R. R., N. E., Canton, O.

Lasure Friction Clutch Co., Fifth & Market Sts., Watertown, Wis.

Minster Machine Co., Minster, O. "Herken, Jr."

O. K. Clutch & Machinery Co., Columbia, Pa.

Twin Disc Clutch Co., Racine, Wis.

PULLEYS AND SHEAVES—See Sheaves and Pulleys**PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection****PUMP CONNECTIONS—See Connections, Tire Pump****PUMP COUPLINGS—See Couplings, Magneto and Generator****PUMP SHAFTS—See Shafts, Transmission****PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline****PUMP WASHERS—See Washers, Leather****PUMPS, AIR—See Pumps, Engine Driven; also Pumps, Foot; also Compressors, Garage; for Steam Air Pumps—See Pumps, Steam Air****PUMPS, Aircraft Water Circulating**

Aeromarine Plane & Motor Corp., Keyport, N. J.

Aro—See Arrow Pump Co.

Arrow Pump Co., 1438 Washington Blvd., Detroit, Mich. "Aro."

Atlas Brass Foundry Co., Columbus, O. (See page 603.)

Atlas Mfg. Co., 980 S. Park St., Columbus O.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Milwaukee Circulating Pump Co., Milwaukee, Wis.) (See page 345.)

Lobes Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.

Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

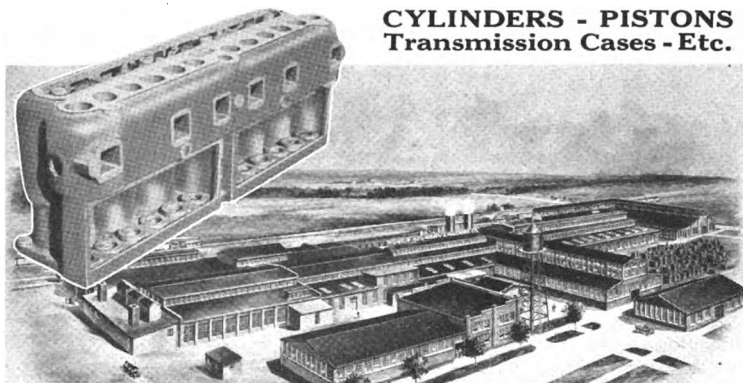
Westco—See Western Pump Co.

Western Pump Co., 428 Third St., Davenport, Ia. "Westco."

Everything is listed under the NOUN or principal word

MOTOR CASTINGS

**CYLINDERS - PISTONS
Transmission Cases - Etc.**



**Modern Equipment to Make the Most Intricate Parts.
The best equipped PATTERN SHOP in the industry.**

Let us figure on your requirements.

MUNCIE FOUNDRY & MACHINE CO. INDIANA

Single



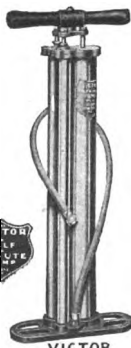
Steel Blue Enamel
25 Case, 120 Lbs.

Triple



Steel
Brass Plated
25 Case, 130 Lbs.

Triple



Brass
25 Case, 175 Lbs.



Single



Steel or Brass
50 Case, 155 Lbs.

Double



Brass or Steel
25 Case, 110 Lbs.

OTHER STYLES ALSO

JUDD & LELAND MFG. CO.

Clifton Springs, N. Y.

Please mention The Automobile Trade Directory

PUMPS, Airplane Fuel

Buffalo Pressed Steel Co., Buffalo, N. Y.
 H. & N. Carburetor Co., 138 West Ave., Long Island City, N. Y.
 Halvorsen—See U. S. Products Corp.
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

PUMPS, Barrel Emptying

(For emptying oil or gasoline barrels or transferring contents to tanks by air pressure)

Doyle—See Tomahawk Mfg. Co.
 Morgan Co., L. A., 9 Pearl St., Brookline, Mass. "Optimo."
 Optimo—See Morgan Co.
 Tomahawk Mfg. Co., 1826 Mannering Road, S. E., Cleveland, O. "Doyle."

PUMPS, BILGE—See Pumps, Motor Boat Engine Driven Bilge**PUMPS, BOILER FEED—See Pumps, Steam Boiler Feed****PUMPS, CIRCULATING—See Pumps, Water Circulating; also Pumps, Aircraft Water Circulating; also Pumps, Motor Boat****PUMPS, Engine Driven Tire**

Advance Machinery Co., Van Wert, O.
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Detroit Pumps.) (See page 243.)
 Bay State Pump Co., 500 E. First St. (S. Boston), Boston, Mass. "Crane."
 Brown Co., 1071-78 Clinton St., Syracuse, N. Y.
 Cassco—See Cassidy Co.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for West Side Foundry Co., Troy, N. Y. "Cassco.")
 Crane—See Bay State Pump Co.
 Detroit Accessories Corp., 8629 Gratiot Ave., Detroit, Mich.
 General Utility Co., 1326-30 Ogden St., Philadelphia, Pa.
 Hauser Machine & Mfg. Co., 232 Mill St., Rochester, N. Y.
 Hill Pump Valve Co.—See Zinke Co.
 Hilton—See Raymond Engineering Corp.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco." (See page 751.)
 Juleco—See Judd & Leland Mfg. Co.
 K S Supply Co., 343 S. Dearborn St., Chicago, Ill.
 Keene Mfg. Co., Keene, N. H.
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Longstroke—See Motor Starter & Air Pump Co.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Long-stroke." (See page 515.)

Ogden Mfg. Co., Plymouth, Ind.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y. "Hilton."
 Risk's Travel Tire Pump Co., Plymouth Bldg., Minneapolis, Minn.
 Roll-On—See V Air Valve & Mfg. Co.
 Rotary Mfg. Co., Kesner Bldg., Chicago, Ill.
 S-H Pump Co., 2440 W. 34th Pl., Chicago, Ill.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill. "Wizard."
 Utility—See Zinke Co.
 V Air Valve & Mfg. Co., 1448 Tremont St., Denver, Colo. "Roll-On."
 West Side Foundry Co.—See Cassidy Co.
 Wissler Instrument Works, A., 601 N. Broadway, St. Louis, Mo.
 Wizard—See Sundstrom Mfg. Co.
 York Electric & Machine Co., 36-34 N. Penn St., York, Pa.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 687.)

PUMPS, Engine Driven Tire, for Fords

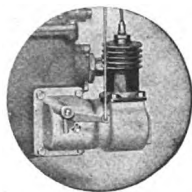
Advance Machinery Co., Van Wert, O.
 Cassco—See Cassidy Co.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for West Side Foundry Co., Troy, N. Y. "Cassco.")
 Danvers Specialty Co., Danvers, Ill.
 Hill Pump Valve Co.—See Zinke Co.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco." (See page 751.)
 Juleco—See Judd & Leland Mfg. Co.
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 Utility Junior—See Zinke Co.
 West Side Foundry Co.—See Cassidy Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Junior.") (See page 687.)

PUMPS, Foot Tire

Auto Pedal Pump Co.—See Cassidy Co.
 Cassidy Co., Edward A., 230 Madison Ave., New York, N. Y. (Sales Department for Auto Pedal Pump Co., New York, N. Y. "Twombly.")
 Liberty—See Apex Electric Mfg. Co.
 Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.
 Service Mfg. Co., 211-13 Center St., New York, N. Y.
 Twombly—See Cassidy Co.

PUMPS, FUEL—See Pumps, Airplane Fuel**PUMPS, GARAGE GASOLINE—See Tanks, Gasoline Storage****PUMPS, GASOLINE FEED—See Systems, Magnetic Pump****PUMPS, GREASE—See Guns, Portable Garage Grease**

Everything is listed under the NOUN or principal word



KELLOGG TIRE PUMPS

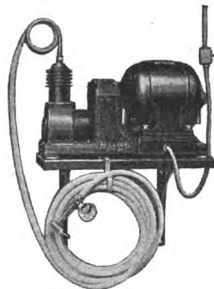
THE
STANDARDIZED MOTORING
COMFORT AND TIRE
INSURANCE



For Passenger Cars

Power driven tire pumps
for 90% of all passenger
cars.

Highly perfected and
standardized.



For Trucks

Power driven tire
pumps for truck tires
from the smallest to
the largest giant pneu-
matics. Best proved
by longest tests as
regular or special
equipment on 95%
of all trucks manu-
factured today.

PIONEER MANUFACTURERS OF TIRE PUMPS

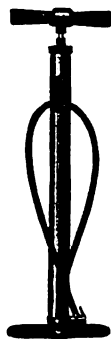
Kellogg patented features guarantee air free from oil



**Combination Grease
and Oil Gun**

Complete Line of Hand Pumps

1, 2, and 3 Cylinders



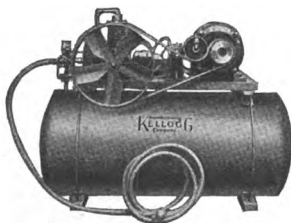
**No. 21
Hand Pump**

A hand
pump of
unequalled
quality.
Brass
cylinder,
stamped steel
footpiece,
36-in. hose,
lubricated
cup leather,
very easy-
working
pump,
durable and
efficient.

A
medium size
compressor
of sufficient
capacity for
the average
garage.
A. C. or
D. C.
motor gear
driven single
cylinder
pump.



Model EM-241



Heavy Duty—Model EM-52

Double cylinder disc
valve type pump.
Constant level oil feed
system. Very compact
and complete, requiring
no extras. Capable of
handling requirements
of large garages.

Write for Catalog and further information

KELLOGG MAUFACTURING CO., ROCHESTER, N. Y.

CHICAGO

SAN FRANCISCO

Please mention The Automobile Trade Directory

PUMPS, Hand Tire

- Ace—See Bridgeport Brass Co.
 Aeolus—See Bridgeport Brass Co.
 Albert Lea Sprayer Co., Albert Lea, Minn.
 "Utility." (See page 757.)
 Alert Sales Corp., Carter Bldg., Rochester, N. Y. (Sole Distributors for Arthur G. Norton, Rochester, N. Y.)
 American Device Mfg. Co., 4523 Shaw Ave., St. Louis, Mo. "Duo." (See page 601.)
 Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill. "Yankee" "Liberty."
 Atlas—See Bridgeport Brass Co.
 Autogrip Mfg. Co., Rochester, N. Y. "Twin," "Triumph," "Paramount," "Try It," "Triple Special," "Royal Triple." (See page 761.)
 B & S Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X L."
 Baldwin—See Coe-Stapley Mfg. Corp.
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Borch & Joder, 211 Kerr St., Hastings, Neb. "Golden Rod."
 Big Bear—See Foster, Merriam & Co.
 Blickman, S., New York, N. Y. "Green Aero." (See page 761.)
 Blizzard—See Bridgeport Brass Co.
 Blue Champion—See Robert-Irwin Mfg. Co.
 Blue Deer—See Melray Mfg. Co.
 Blue Devil—See Judd & Leland Mfg. Co.
 Boss—See Cox Brass Mfg. Co.
 Bridgeport Brass Co., Bridgeport, Conn. "Stapley," "Aeolus," "Atlas," "Crown," "Windjammer," "Weeno," "Ace." (See page 757.)
 C. & S.—See Codman & Shurtleff.
 Carver—See Newton Mfg. Co.
 Casey-Hudson Co., 301 E. Ohio St., Chicago, Ill. (See pages 605 and 829.)
 Champion, Jr.—See Robert-Irwin Mfg. Co.
 Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.
 Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C & S."
 Coe-Stapley Mfg. Corp., West Haven, Conn. "Rex," "Little Giant," "Baldwin," "Whirlwind," "Longfellow," "Gem," "Okeh." (See page 539.)
 Cox Brass Mfg. Co., Albany, N. Y. "Boss," "Handy," "Reliable." (See page 171.)
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)
 Crown—See Bridgeport Brass Co.
 Cyclone—See Judd & Leland Mfg. Co.
 Dead Easy—See Globe Mfg. Co.
 Duo—See American Device Mfg. Co.
 Durabilt—See Winsted Hardware Mfg. Co.
 E-M-G—See Gant Mfg. Co.
 Eureka—See Judd & Leland Mfg. Co.
 Excel—See Judd & Leland Mfg. Co.
 E-Z-Quick—See Mayo-Skinner Mfg. Co.
 Factory Sales Co., 120 Broadway, New York, N. Y. "Hilton."
 Fapco—See Force Air Pump Co.
 Force Air Pump Co., 203 S. Oak St., Jefferson, Ia. "Fapco."
 Foster, Merriam & Co., Meriden, Conn. "Big Bear." (See page 809.)
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Monroe Automotive Equipment Mfg. Co., Monroe, Mich.) (See page 1021.)
 Gant Mfg. Co., E. M., Ethridge, Tenn. "E-M-G."
 Gem—See Coe-Stapley Mfg. Co.
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 Geneva—See Howell Co.
 Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.
 Globe Mfg. Co., 64 Grant St., Battle Creek, Mich. "Dead Easy."
 Golden Rod—See Borch & Joder.
 Green Aero—See Blickman, S.
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Handy—See Cox Brass Mfg. Co.
 Harlem—See Judd & Leland Mfg. Co.
 Hart-Bell Co., 1926 Broadway, New York, N. Y.
 Hilton—See Factory Sales Co.
 Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."
 Holstein Mfg. Co., Richland, Pa. (See page 757.)
 Howell Co., W. H., Geneva, Ill. "Jensen," "Geneva." (See page 755.)
 Ideal—See Noera Mfg. Co.
 I. X. L.—See Inland Pump Mfg. Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Wixon." (See page 177.)
 Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Surestroke."
 Inland Pump Mfg. Co., 610-12 Reaper Bldg., Chicago, Ill. "I. X. L." (See page 757.)
 J-K—See Jensen-Kohlert Mfg. Co.
 James—See Generator Valve Co.
 Jensen—See Howell Co.
 Jensen-Kohlert Mfg. Co., St. Charles, Ill. "J-K." (See page 761.)
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Eureka," "Tornado," "Cyclone," "Victor," "Excel," "Harlem," "Little Taylor." (See page 751.)
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Liberty—See Apex Electric Mfg. Co.
 Liberty—See Reece-Hilton.
 Little Giant—See Coe-Stapley Mfg. Co.
 Little Taylor—See Judd & Leland Mfg. Co.
 Longfellow—See Coe-Stapley Mfg. Corp.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "E-Z-Quick."
 Melray Mfg. Co., 722 N. Vandeventer Ave., St. Louis, Mo. "Blue Deer."
 Metro Automotive Co., Thoroughfare Bldg., New York, N. Y. (Sole Distributors for Ruggles-Klingemann Mfg. Co., Salem, Mass.)
 Monroe Automotive Equipment Co.—See Fulton Co.
 Moon Bros. Mfg. Co., 4900 McKissock Ave., St. Louis, Mo.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Myers Auto Pump Co., 61 Washington St., Paterson, N. J.
 National Service Mfg. Co.—See Pivot Sales Corp.
 Newton Mfg. Co., Church St., Plainville, Conn. "Carver."
 No. 99—See Stevens & Co.
 Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn. "Red Devil," "Ideal," "Waterbury."
 Norton, Arthur G.—See Alert Sales Corp.

Everything is listed under the NOUN or principal word

The MORGAN RED PUMP

Will inflate tires in practically half the time an ordinary pump requires. Barrel of cold drawn steel—easily renewable leather on piston—5-ply Goodrich hose. Exclusive foot strap feature allows pump to be used either at angle or vertically. Finished in red enamel. Packed in lots of 25.

22
inch

\$450

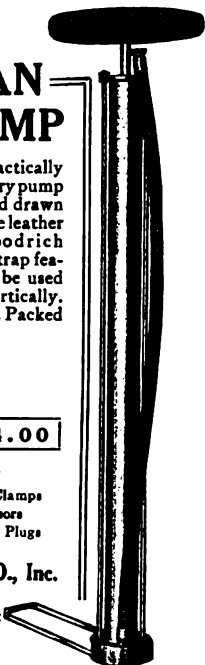
18 - Inch \$4.00

Other Products

Valve Lifters Hose Clamps
Piston Ring Compressors
Ball Joints Spark Plugs

MORGAN MFG. CO., Inc.
Court Street KEENE, N.H.

*"To please your trade
sell Morgan-made"*



THE ANTHONY



450,000 users of ANTHONY Pumps are satisfied. This is the verdict of men who paid for quality and expected service.

400,000 of these previously tried other makes of pumps. They first used cheap junk, double acting stuff, or two or three cylinder varieties.

Then they bought the best pump on the market. The original quality pump. A guaranteed genuine ANTHONY with all metal valve.

Now they are satisfied.

Retail
Any Size \$4.50

THE ANTHONY COMPANY

138 West Avenue
Long Island City, N. Y.



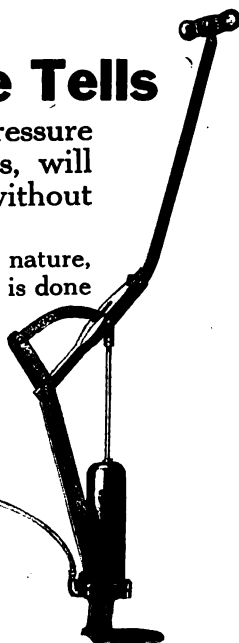
The Story A Gauge Tells

It does not take 175 to 200 lbs. pressure to fill a tire, but the question is, will your pump do it and besides, without physical torture?

Probably never tried a severe test of this nature, but the point is this—it can be done and is done many, many times a day by owners of the Jensen Lever Pump.

One-half the strokes and one-quarter the effort sounds good on these hot days.

A trial will convince you and we can ship at once.



THE W. H. HOWELL CO.

Geneva, Illinois

Please mention The Automobile Trade Directory

PUMPS, Hand Tire (Continued)

Okeh—See Coe-Stapley Mfg. Corp.
 Paramount—See Autoquip Mfg. Co.
 Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."
 Perko—See Perkins Marine Lamp Corp.
 Petry Co., N. A., 1307 Race St., Philadelphia, Pa.
 Pivot Sales Corp., 608 Chestnut St., Philadelphia, Pa. (Sole Distributors for National Service Mfg. Co., Philadelphia, Pa.)
 Red Devil—See Noera Mfg. Co.
 Red Wonder—See Sidel-Rattner Mfg. Co.
 Reece-Hilton, Troy, N. Y. "Liberty."
 Reliable—See Cox Brass Mfg. Co.
 Rex—See Coe-Stapley Mfg. Co.
 Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion," "Champion, Jr." (See page 609.)
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)
 Royal-Triple—See Autoquip Mfg. Co.
 Ruggles-Klingemann Mfg. Co.—See Metro Automotive Co.
 S-O-S—See Hite Mfg. Co.
 Shawyer Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."
 Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder." (See page 759.)
 Springfield—See Shawyer Co.
 Stapley—See Bridgeport Brass Co.
 Stevens, C. S., 680 W. Main St., New Britain, Conn.
 Stevens & Co., 375 Broadway, New York, N. Y. "No. 99." (See page 201.)
 Surestroke—See Indianapolis Air Pump Co.
 Tornado—See Judd & Leland Mfg. Co.
 Triple Special—See Autoquip Mfg. Co.
 Triumph—See Autoquip Mfg. Co.
 Try-It—See Autoquip Mfg. Co.
 Turner Brass Works, Sycamore, Ill. (See page 177.)
 Twin—See Autoquip Mfg. Co.
 Utility—See Albert Lea Sprayer Co.
 Victor—See Judd & Leland Mfg. Co.
 Waterbury—See Noera Mfg. Co.
 Wayne Engineering Co., 1400 Broadway, New York, N. Y. "Wenco."
 Weene—See Bridgeport Brass Co.
 Wenco—See Wayne Engineering Co.
 Whirlwind—See Coe-Stapley Mfg. Corp.
 Windjammer—See Bridgeport Brass Co.
 Winsted Hardware Mfg. Co., Winsted, Conn. "Durablitt."
 Wixon—See Imperial Brass Mfg. Co.
 X L—See B & S Mfg. Co.
 Yankee—See Apex Electric Mfg. Co.

PUMPS, Motor Boat Engine Driven Bilge

(See also Boilers, Automatic Bilge)

Bevia Bros. Mfg. Co., East Hampton, Conn.
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 Halvorsen—See U. S. Products Corp.
 James—See Generator Valve Co.
 Lobe Pump & Machinery Co., 119 Dearborn St., Buffalo, N. Y.
 Monarch Valve Co., 112 Front St., Brooklyn, N. Y.

U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
 Wilcox-Crittenden & Co., 2 S. Main St., Middletown, Conn.

PUMPS, Motor Boat Water Circulating

Aro—See Arrow Pump Co.
 Arrow Pump Co., 1438 Washington Blvd., Detroit, Mich. "Aro."
 Atlas Brass Foundry Co., Columbus, O. (See page 603.)
 Fulco Pump Co., 126 Opera Pl., Blanchester, O.
 Halvorsen—See U. S. Products Corp.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales representative for Milwaukee Circulating Pump Co., Milwaukee, Wis.) (See page 345.)
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Lobe Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.
 Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.
 Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
 Westco—See Western Pump Co.
 Western Pump Co., 428 Third St., Davenport, Ia. "Westco."

PUMPS, Motorcycle Tire

Anthony Co., 188 West Ave., Long Island City, N. Y. (See page 756.)
 Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

PUMPS, OIL—See Lubricators**PUMPS, OIL FILLER—See Tanks and Systems, Oil****PUMPS, POWER TIRE—See Pumps, Engine Driven; also Pumps, Garage****PUMPS, Steam Air**

(For keeping air pressure on fuel tanks of steam cars)
 Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.
 Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

PUMPS, Steam Boiler Feed

(For feeding boilers of steam cars)
 American Steam Pump Co., Maple St., Battle Creek, Mich. "Marsh."
 Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.
 Marsh—See American Steam Pump Co.
 Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

PUMPS, TIRE—See Pumps, Engine Driven; also Pumps, Foot; also Pumps, Hand; also Pumps, Motorcycle Tire; also Compressors, Garage**PUMPS, Tractor Water Circulating**

Aro—See Arrow Pump Co.
 Arrow Pump Co., 1438 Washington Blvd., Detroit, Mich. "Aro."
 Atlas Brass Foundry Co., Columbus, O. (See page 603.)
 Fulco Pump Co., 126 Opera Pl., Blanchester, O.

Everything is listed under the NOUN or principal word

Bridgeport "16"



Rust - proof

Seamless Brass Cylinder.

Leak - proof

Joint between Base and Cylinder.

Better Built

Embodying the experience of a quarter of a century of tire pump building.

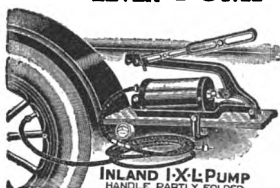
Ask for our new catalogue.

BRASS
Bridgeport

Bridgeport Conn. U.S.A.

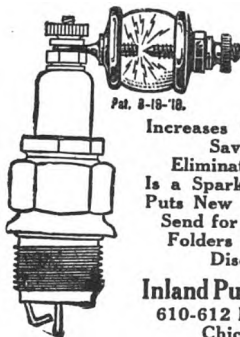
INLAND I-X-L PUMP

The Most Powerful Compact Pump Easiest Pumping Always Ready Made to Last



INLAND I-X-L PUMP
HANDLE PARTLY FOLDING

Folding Handle and Folding Clamp
Takes the "Back Hump" Out of the Old Hand Pump



Pat. 8-19-18.

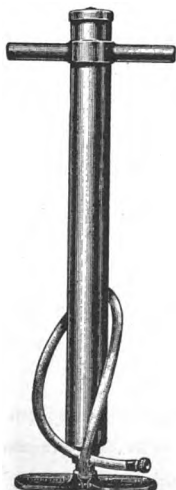
Universal Spark Plug Intensifier

Increases Motor Power
Saves Gas

Eliminates Carbon
Is a Spark Plug Tester
Puts New Life in Plugs
Send for Descriptive
Folders and Trade
Discounts

Inland Pump Mfg. Co.
610-612 Reaper Block
Chicago, Ill.

DEALERS



Use this pump yourself for thirty days. Then, when you are convinced that it is the best pump on the market, sell it to your trade. There are big profits in it for you.

If you are not completely satisfied, return the pump to us. We will refund your money and pay the express charges both ways.

We know that this double-acting, powerful pump is sure to give entire satisfaction—that is why we make this unusual offer.

GARAGE MEN. Try this pump for thirty days. It will take the place of an air compressor.

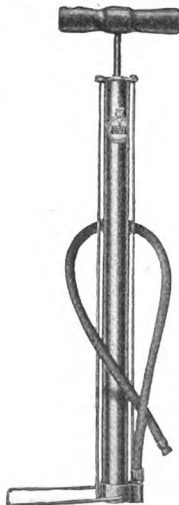
Retail Price,

\$6.00

HOLSTEIN MFG. CO.

Richland, Lebanon Co. - - Pa.

The UTILITY HAND TIRE PUMP



Constructed of iron and steel. Barrel, 1 1/2 x 20 inches. Heavy steel tubing. Cast base, with ball check valve, seating on brass. Folding foot strap. Removable handle. 1/4 in. tubing, 26 in. long, with standard connection. Total length of pump, 24 in. 7/8 in. cold rolled plunger rod with cast plunger and high grade leather cup.

All the air is expelled at each down stroke.

Manufactured Only By
ALBERT LEA SPRAYER CO.
Albert Lea, Minn., U. S. A.

Please mention The Automobile Trade Directory

PUMPS, Tractor Water Circulating (Continued)

Halvorsen—See U. S. Products Corp.
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales representative for Milwaukee Circulating Pump Co., Milwaukee, Wis. (See page 345.)
Lobee Pump & Machinery Co., 119 Dearborn St., Buffalo, N. Y.
Michigan Machine Co., 951 Porter St., Detroit, Mich. "Rollway."
Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
Peru Brass & Mfg. Co., Peru, Ind.
Rollway—See Michigan Machine Co.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

PUMPS, Water Circulating

Aro—See Arrow Pump Co.
Arrow Pump Co., 1438 Washington Blvd., Detroit, Mich. "Aro."
Atlas Brass Foundry Co., Columbus, O. (See page 603.)
Blackmer Rotary Pump Co., Sheridan Ave. & G. R. & I. Railway, Petoskey, Mich.
Cluley Auto Supplies Co., 471 E. Ohio St., Chicago, Ill. "Gusher."
Doehler Die-Casting Co., Brooklyn, N. Y. (See page 213.)
Fulco Pump Co., 126 Opera Pl., Blanchester, O.
Gusher—See Cluley Auto Supplies Co.
Halvorsen—See U. S. Products Corp.
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales representative for Milwaukee Circulating Pump Co., Milwaukee, Wis. (See page 345.)
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.
Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.
Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
Westco—See Western Pump Co.
Western Pump Co., 428 Third St., Davenport, Ia. "Westco."

PUMPS, Water Circulating, for Fords

(Auxiliary water circulators)

Atlas Brass Foundry Co., Columbus, O. (See page 603.)
Atlas Ford Pump Co., 224 Fourth St., Los Angeles, Cal.
Butler—See Riverside Specialty Works.
Cyclone—See Holland Brass Works.
Felker Bros. Mfg. Co., Marshfield, Wis. "Perfection."
General Metals Co., 6189 Greenwood Ave., Detroit, Mich. "Serkulater."
Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales representative for Milwaukee Circulating Pump Co., Milwaukee, Wis. (See page 345.)
Little Wonder—See Riverside Specialty Co.
Lobee Pump & Machinery Co., 111-19 Dearborn St., Buffalo, N. Y.

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
Milwaukee Circulating Pump Co.—See Jonas, C. N. & F. W.

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
Ospeco—See Michigan Auto Products Co.
Parker White Metal & Machine Co., 23d & Railroad Sts., Erie, Pa.
Perfection—See Felker Bros. Mfg. Co.
Perry Auto Co., 309 Seventh St., Pittsburgh, Pa. "Security."
Peru Brass & Mfg. Co., Peru, Ind.
Riverside Specialty Co., Riverside, Cal. "Little Wonder," "Butler."
Security—See Perry Auto Co.
Serkulater—See General Metals Co.
Schilling Mfg. Co., 923-20 Pacific Ave., Long Beach, Cal. "Vanreush."
Standard Auto Accessories Co., 127 S. Green St., Chicago, Ill.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
Universal Appliance Co., 186 Fifth St., Milwaukee, Wis. (See page 759.)
Vanreush—See Schilling Mfg. Co.
Westco—See Western Pump Co.
Western Pump Co., 428 Third St., Davenport, Ia. "Westco."

PUMPS, WATER CIRCULATING AIR-CRAFT—See Pumps, Aircraft Water Circulating

PUMPS, WATER CIRCULATING MOTOR BOAT—See Pumps, Motor Boat Water Circulating

PUMPS AND AIR COMPRESSORS, GARAGE—See Compressors, Garage Air

PUNCHES, Arch and Washer

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
Kraeuter & Co., Newark, N. J. (See page 1001.)

PUNCHES, Center, Prick and Drift

Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.
Beall Bros., Fourth St., Alton, Ill.
Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
Buffum Tool Co., Louisiana, Mo. (See page 395.)
Carver Tool Works, Spring Valley, N. Y.
Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
Easy Hold—See West Haven Mfg. Co.
Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
Goodell-Pratt Co., Greenfield, Mass.
Hargrave—See Cincinnati Tool Co.
Harrold Tool & Forge Co.—See Wiebusch & Hilger.
Kortick Mfg. Co., 345 First St., San Francisco, Cal.
Kraeuter & Co., Newark, N. J. (See page 1001.)
Marcy Tool Works, Putnam, Conn.
Mayhew Steel Products, 291 Broadway, New York, N. Y.
Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

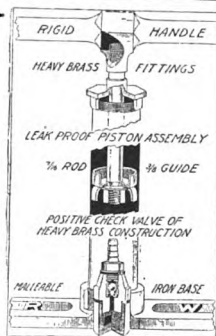
Everything is listed under the NOUN or principal word



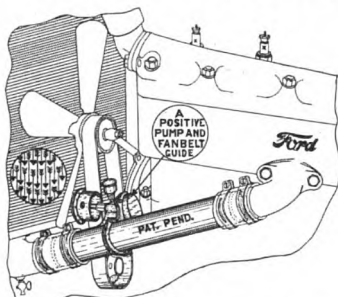
THE GENUINE ORIGINAL RED WONDER

A most remarkable single cylinder pump.
Distinctive and individual in appearance.

Built by
SIDEL-RATTNER MFG. COMPANY, Inc.
BUSH TERMINAL **BROOKLYN, N. Y.**



FORDS WILL NOT OVERHEAT OR FREEZE!



The Universal Water Circulator weighs less than two pounds, is composed of only two parts cast in aluminum with bronze bearings and it can be attached to any Ford passenger car or truck in fifteen minutes.

The Ford fan belt running on a pulley drives the pump. Once installed, it does its work faithfully and continuously and requires no further attention. Its simplicity, practicability and low cost appeal to every Ford car or truck owner.

Manufactured, Sold and Guaranteed by
UNIVERSAL APPLIANCE CO., Inc.
186 FIFTH ST. MILWAUKEE, WIS.

if equipped with the Universal Water Circulator. When this positive pump is installed, proper circulation in the radiator is assured—and no motor can overheat if the water circulates rapidly as it should.

More Ford radiators freeze every year than those of cars of other makes. This is due to the fact that a Ford has no water pump and the circulation, being sluggish, the motor frequently overheats. This overheating causes the rapid evaporation of the non-freeze solution in the water and a frozen radiator is the result.

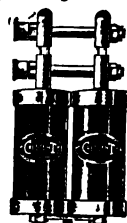
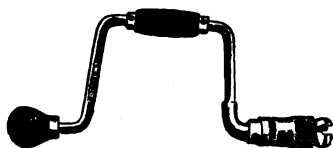
The Circulator, by preventing overheating, prevents freezing.

DEALERS:

The Universal Water Circulator fills the long-felt want for a reliable water pump for Fords—there has long been a universal demand for a product such as this. This demand, the low retail price and our liberal trade discounts make this a very attractive article for you to handle. A post-card will bring you full information.

Crescent Manufacturing Company

Manufacturers of an extensive line of
Automobile Accessories and Tool Kits.



Will Send Catalogue Upon Request

CRESCENT MFG. CO., 129 Reade St., N. Y., U. S. A.

Please mention The Automobile Trade Directory

PUNCHES, Center, Prick and Drift
(Continued)

O. K.—See West Haven Mfg. Co.
 Peck, Stow & Wilcox Co., Southington, Conn.
 "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Red Devil—See Smith & Hemenway.
 S. & I. Co., 55-57 Governor St., Springfield, Mass.
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Starrett Co., L. S., Athol, Mass.
 Storrs & Son, John, 210-12 Vine St., Philadelphia, Pa.
 Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
 Tuck Mfg. Co., 74 Ames St., Brockton, Mass.
 Union Tool Co., 48 E. River St., Orange, Mass.
 V. & B.—See Vaughan & Bushnell Mfg. Co.
 Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."
 West Haven Mfg. Co., 22 Elm St. (W. Haven), New Haven, Conn. "O. K." "Easy Hold."
 Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harold Tool & Forge Co., Columbiana, O.)

PUNCHES, DEALERS IN—See Machinery, Dealers in

PUNCHES, DRIFT—See Punches, Center, Prick and Drift

PUNCHES, HAND—See Punches, Portable Hand

PUNCHES, Portable Hand

Armstrong-Blum Mfg. Co., 333 N. Francisco Ave., Chicago, Ill. "Marvel."
 Bicknell Mfg. & Supply Co., 23 N. Academy St., Janesville, Wis.
 Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
 Clough, R. M., Tolland, Conn.
 Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "Little Giant."
 Jiffy—See Koch & Co.
 Kidder Mfg. Co., J. F., Burlington, Vt.
 Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."
 Little Giant—See Excelsior Tool & Machine Co.
 Little Giant Punch & Shear Co., 218 S. Market St., Sparta, Ill.
 Marvel—See Armstrong-Blum Mfg. Co.
 Parker Supply Co., 785 E. 135th St., New York, N. Y.
 Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.

PUNCHES, PRICK—See Punches, Center Prick and Drift

PUNCHES, WASHER—See Punches, Arch and Washer

PUNCTURE SEALING COMPOUNDS—See Compounds, Puncture Sealing

PURIFIERS, Acetylene Gas

(For insertion in pipe line between generator and lamps to remove impurities from the gas and prevent chocking of lights)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 263.)

PURIFIERS, GASOLINE—See Strainers or Separators, Gasoline

PURIFIERS, Oil

De Laval Separator Co., 165 Broadway, New York, N. Y.

PUSH BUTTON SWITCHES—See Switches, Light

PUSH BUTTONS—See Buttons, Push

PUSH ROD SILENCERS, OVERHEAD VALVE—See Silencers, Overhead Valve

PUSH RODS—See Rods, Adjustable Valve Lift

PUTTEES, Aviators

Spalding & Bro., A. G., 126 Nassau St., New York, N. Y.

PUTTY, RUBBER—See Compounds, Tire Repair

PUTTY, TIRE—See Compounds, Tire Repair

PYROMETERS

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.
 Brown Instrument Co., Wayne & Windrim Aves., Philadelphia, Pa.
 Du Vivier, Ernest H., 30 Church St., New York, N. Y. (Importer.)
 Englehard, Charles, 30 Church St., New York, N. Y.
 Esterline Co., 227 E. South St., Indianapolis, Ind.
 Hanovia Chemical & Mfg. Co., 233-39 N. J. Railroad Ave., Newark, N. J.
 Hoskins Mfg. Co., 4435 Lawton Ave., Detroit, Mich.
 Leeds & Northrup Co., 4919 Stenton Ave., Philadelphia, Pa.
 Monopivot—See Wilson-Maeulen Co.
 Pyods—See Wilson-Maeulen Co.
 Pyroscope—See Shore Instrument & Mfg. Co.
 Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.
 Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.
 Shore Instrument & Mfg. Co., 9025-29 Van Wyck Ave., New York, N. Y. "Pyroscope."
 Stupakoff Laboratories, 410 Amberson Ave., Pittsburgh, Pa.
 Tapalog—See Wilson-Maeulen Co.
 Taylor Instrument Cos., 95 Ames St., Rochester, N. Y. "Tycos."
 Thwing Instrument Co., 3339 Lancaster Ave., W., Philadelphia, Pa. "Twinko."
 Twinko—See Thwing Instrument Co.
 Tycos—See Taylor Instrument Cos.

Everything is listed under the NOUN or principal word

1400%

INCREASED SALES THIS YEAR



It's the quality we are building in the pump

Six Models one for every need.

Jobbers and Dealers

We have an interesting proposition.

AUTOQUIP
Mfg. Co., Inc.
Rochester, N. Y.

1 1/2" steel tube. Blue enamel. No. 11 Try-It\$2.75

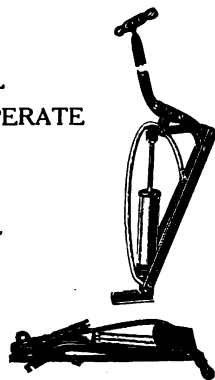
1 1/2" Brass tube nickel plated. A remarkable selling pump. Price, \$4.00

The World's Best Pump

The J. K. Lever Pump

RELIABLE
POWERFUL
EASY TO OPERATE
DURABLE
COMPACT
ALL STEEL
NEAT

List
Price
\$5.50



Patented Oct. 4, 1913
Other Patents Pending

Manufactured by
JENSEN KOHLERT MFG. CO.
ST. CHARLES, ILL.

ROSE

TIRE PUMP

Quick, Easy Sales
With Good Profits

The Rose Tire Pump will give you quick, easy sales with good, steady profits. It's the one pump that gives lasting satisfaction—that's its best advertisement. Over 2,500,000 Rose Pumps have made tire pumping easy for their owners. The Patent Valve of the Rose Pump has made it the one big leader in the tire pump field.



GREASE GUNS AND BUCKETS

The Rose Taper Nozzle Grease Gun is the cleanest, handiest, most efficient and most economical gun on the market. The Rose Fil-A-Gun Grease Bucket pumps grease direct from the bucket to the point where it is needed. Like the Rose Pump, both sell easily and will make you good profits.

Get Rose Products from Your Jobber.
Write to him for catalogue and prices.
FRANK ROSE MFG. CO., Hastings, Nebr.

THE GREEN AERO PUMP

Quality
Materials
Correct
Construction

Dealers

Your success in retailing tire pumps depends on the line you select.

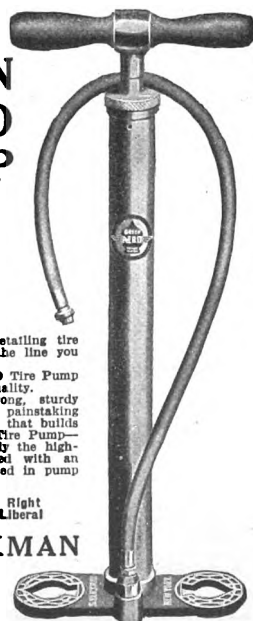
The GREEN AERO Tire Pump is the utmost in quality.

Back of that strong, sturdy construction is the painstaking effort of skilled labor that builds the GREEN AERO Tire Pump—from materials of only the highest quality. Finished with an appearance unsurpassed in pump manufacture.

The Price is Right
Your Profit is Liberal

S. BLICKMAN

New York



Please mention The Automobile Trade Directory

PYROMETERS (Continued)

Wilson-Macaulen Co., 730 E. 143d St., New York, N. Y. "Pyods," "Tapalog," "Monopivot."

Zaubits, August, 97 Cliff St., New York, N. Y.

QUICK DETACHABLE RIMS—See Rims, Quick Detachable

QUICK DETACHABLE STEERING WHEEL RINGS, TRACTOR—See Rings, Tractor Quick Detachable Steering

QUICK STOP TRACTOR HITCHES, AUTOMATIC—See Hitches, Automatic Quick Stop Tractor

RACES, BALL—See Cups, Ball

RACKS, BODY HANDLING—See Trucks, Body Handling

RACKS, ELECTRICAL TESTING—See Instruments, Electrical Circuit Testing

RACKS, ENGINE REPAIR—See Stands, Engine Repair

RACKS, Hat

(Ord hat racks or holders for use in closed cars; see also Hangers, Hat)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 165.)

Columbia—See Hortsmann Co.

Hortsmann Co., Wm. H., Fifth & Cherry Sts., Philadelphia, Pa. "Columbia."

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

RACKS, LUGGAGE, FOR FORDS—See Racks, Trunk

RACKS, Metal Tool, Stock and Tire

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.

All-Steel-Equipt Co., 150 John St., Aurora, Ill.

Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)

Berloy—See Berger Mfg. Co.

Berger Mfg. Co., 1038 Belden Ave. N. E., Canton, O. "Berloy."

Bracegirdle, H. V., 1777 Broadway, New York, N. Y. "Mankey."

Carll's Sons, Chas. W., Coles St., Trenton, N. J.

Champion—See Western Tool & Mfg. Co.
Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.

Crackerjac—See Reed Mfg. Co.

Cyclone Fence Co., Waukegan, Ill.

Darby & Sons Co., Edward, 412 N. 18th St., Philadelphia, Pa. "Pen Dar."

Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.

Dow Wire & Iron Works, Franklin, Buchanan & Pocahontas Sts., Louisville, Ky. (See page 159.)

Durand Steel Locker Co., 1509 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 587.)

E & S—See J B S Mfg. Co.

Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Iowa.

Empire Art Metal Co., College Point, N. Y.
Fairbanks Co., New York, N. Y. (See Distributors for Servistock System Corp., Detroit, Mich.) (See pages 619 to 622.)

Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.

Foster Bros. Mfg. Co., 811 Broad St., Utica, N. Y.

Hettis Co., Dime Bank Bldg., Detroit, Mich.

J B S Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y. "E & S."

Jeffers Co., R. W., 11th & Linden Sts., Camden, N. J.

Jiffy—See Welton Mfg. Co.

Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.

Lupton's Sons Co., David, Allegheny & Tulip Sts., Philadelphia, Pa.

Lyon Metallic Mfg. Co., (Montgomery), Aurora, Ill.

M. & M. Co., 500 Prospect St., Cleveland, O.

Mankey—See Bracegirdle, H. V.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Meeco."

Meeco—See Manufacturing, Equipment & Engineering Co.

Multi-Unit—See National Scale Co.

National Scale Co., 9 Montgomery St., Chippewa Falls, Mass. "Multi-Unit."

New Britain Machine Co., Chestnut St., New Britain, Conn.

Nichol-Straight Foundry Co., 323 W. Austin Ave., Chicago, Ill.

Ohio Mfg. Co., Painesville, O.

Pen-Dar—See Darby & Sons Co.

Perfection Garage Equipment Co., Hagerstown, Md. (See page 763.)

Red Seal Mfg. Co., Cedar Rapids, Ia.

Reed Mfg. Co., Even L., Sterling, Ill. "Crackerjac."

Security—See Smith Co.

Shultz & Co., H. H., 24 Commercial St., Gowanda, N. Y.

Smith Co., W. J., 1834 Broadway, New York, N. Y. "Security." (See page 763.)

Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.

Van Dorn Iron Works Co., 3635 E. 79th St., Cleveland, O.

Wallace Supplies Mfg. Co., 430 Orleans St., Chicago, Ill.

Welton Mfg. Co., Majestic Bldg., Detroit, Mich. "Jiffy."

Western Tool & Mfg. Co., Springfield, O. "Champion."

RACKS, ROBE—See Rails, Robe

RACKS, STOCK—See Racks, Metal Tool

RACKS, TIRE—See Racks, Metal Tool

RACKS, TOOL—See Racks, Metal Tool

RACKS, Trunk

Highton & Sons Co., Wm., Nashua, N. H.

Gray, Jr., Niel, Oswego, N. Y.

Reese Machine & Tool Works, E., 224-30 W. Main St., Plymouth, Pa.

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 327.)

Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 339.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 203.)

Everything is listed under the NOUN or principal word

SECURITY Display TIRE RACK

Guards Stock, Sells Tires and Saves Space. Tires are always on display, always instantly accessible and always absolutely guarded against theft. This rack is all-steel construction and is backed by an iron-clad guarantee. It is 12 ft. 8 in. long, 8 ft. 9 in. high and 2 ft. 1 in. deep. By simply raising the locking arm any tire on the rack can be lifted out. When this arm is brought down and locked not a tire can be removed. A Yale Spring Lock locks the arm to the rack. Better than a salesman—safer than insurance. Write us today.

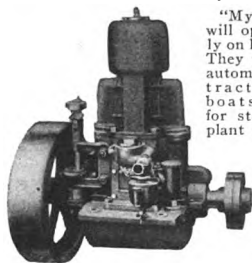
THE W. J. SMITH COMPANY, 1834 Broadway, New York

← ARO → FRONT AND REAR SIGNAL

An Electric Signal for all motor vehicles, connected to the battery and attached to each fender, front and rear. Operated by a double switch attached to steering wheel. Aluminum Arrows encasing 20 candle power nitrogen bulbs and faced with ruby glass makes this signal effective night and day. Armored wire used throughout. Attractive in appearance. Positive in operation. Makes for safety of passenger and pedestrian. The most practical safety signal ever manufactured. Complies with the law. Easy to install. Write us today for territory.

What is the Mystic Motor?

A two-stroke internal combustion motor operating on the entirely new "Mystic" twin-piston principle and setting new standards of operating economy and power output that have been regarded as unattainable heretofore.

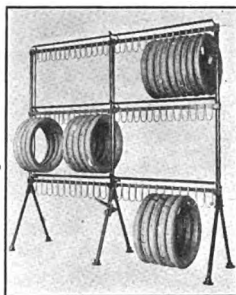


"Mystic" Motors will operate efficiently on low-grade fuels. They will be built for automobiles, trucks, tractors, motor boats, aircraft and for stationary power plant use.

If you are interested in this motor that is built upon an absolutely original theory, write to

MYSTIC MOTOR COMPANY

1457-1463 Broadway
New York



The Perfection Rack Displays and Protects Your Tires

Every tire is held securely in place by an individual patented hanger. They are well displayed and protected against theft by a master locking arm.

The rack is made of metal and reinforced at all joints. Carried in stock sizes of 10 and 12 feet—either 2 or 3 tier. We can also make to order any size to meet your individual requirements. Write for Booklet "D" and prices.

The Perfection Garage Equipment Co.

Hagerstown, Maryland, U. S. A.

PERFECTION
TIRE LOCKING AND DISPLAY RACK



Clover Grinding and Lapping Compound

Made in 8 Grades

- 2-A (Microscopic fine)
- 1-A (Very fine)
- A (Fine)
- B (Medium)
- C (Medium coarse)
- D (Coarse)
- E (Very coarse)
- No. 50 (Extra coarse)

No. 50

One grade to the can

In ¼ lb., ½ lb., 1 lb., and 5 lbs.

Over 10,000,000 cans sold since 1907.

Recognized as the standard the world over for Valve Grinding, Cylinder Lapping, Fitting Piston Rings, etc.

Send for Free Instructional Bulletins: No. 75 on Valve Grinding; No. 80 on Cylinder Lapping, Fitting Rings, etc.; No. 90 on Shop Kinks.

For the Kit
Standard

4 oz.

Duplex Can

Containing equal parts grades D for roughing and A for finishing.

2 oz. Duplex Can

Same as 4 oz. can only smaller. Now contains exactly the same materials as the 4 oz.



CLOVER MFG. CO., 410 Main St., NORWALK, CONN., U. S. A.

Branches: San Francisco and Chicago

Please mention The Automobile Trade Directory

RACKS, TRUNK, and LUGGAGE CARRIERS, for Fords

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Hastings Mfg. Co., 38 Mill St., Hastings, Mich. (See page 573.)

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Republie Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.

Sterling—See Republie Auto Parts Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

RADIAL DRILLS—See Drills, Radial

RADIATOR CAP LOCKS—See Locks, Radiator Cap and Thermometer

RADIATOR CAPS—See Caps, Brass Radiator; also Caps, Rubber Radiator

RADIATOR CAPS FOR FORDS—See Caps, Radiator

RADIATOR CLEANING COMPOUNDS—See Compounds, Radiator Cleaning

RADIATOR CONDENSERS—See Condensers, Radiator

RADIATOR CONNECTIONS—See Hose, Radiator

RADIATOR COVERS—See Covers, Radiator; also Shutters, Automatic Radiator; also Shutters, Metal Radiator

RADIATOR CRADLES FOR FORDS—See Cradles, Radiator

RADIATOR DISCS—See Discs, Radiator

RADIATOR FANS—See Fans, Radiator

RADIATOR FENDERS—See Fenders or Guards, Truck Radiator

RADIATOR FIN STRAIGHTENING TOOLS FOR FORDS—See Tools, Radiator Fin Straightening

RADIATOR GAGES—See Gages, Radiator

RADIATOR GUARDS—See Fenders or Guards, Truck Radiator

RADIATOR HEATERS—See Heaters, Radiator

RADIATOR HOODS FOR FORDS—See Hoods, Radiator

RADIATOR HOSE—See Hose, Radiator

RADIATOR LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lacs

RADIATOR MONOGRAMS—See Monograms, Ornamental

RADIATOR ORNAMENTS—See Ornaments, Radiator; also Flags; also Holders, Flag; also Monograms, Ornamental

RADIATOR PANS FOR FORDS—See Pans, Radiator Splash

RADIATOR REPAIR CEMENT—See Cement, Radiator Repair

RADIATOR REPAIR STANDS—See Stands, Radiator Repair

RADIATOR SEALING COMPOUNDS—See Cement, Radiator Repair

RADIATOR SHIELDS—See Shutters, Radiator

RADIATOR SHUTTERS—See Shutters, Automatic Radiator; also Shutters, Metal Radiator

RADIATOR SIGNS—See Monograms, Ornamental Metal

RADIATOR STRAINERS—See Strainers, Radiator and Tank Filler

RADIATOR TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator

RADIATOR TESTING PLUGS FOR FORDS—See Plugs, Radiator Testing

RADIATOR THERMOMETER LOCKS—See Locks, Radiator Cap and Thermometer

RADIATOR THERMOMETERS—See Meters, Water Temperature Indicating

RADIATORS, Aircraft Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."

Ansted Co., 600 W. 57th St., New York, N. Y. (See page 771.)

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig Zag."

B & W Mfg. Co., 5235 Ravenswood Ave., Chicago, Ill.

Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.

Bush Mfg. Co., Hartford, Conn. (See page 787.)

Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 633.)

Curtiss Aeroplane & Motor Corp., Garden City, N. Y.

English & Mersick Co., New Haven, Conn. (See page 571.)

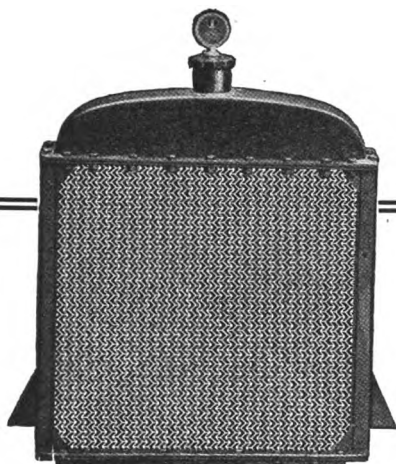
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 115.)

Fedders Mfg. Co., Buffalo, N. Y. (See page 789.)

Flexo Mfg. Co., 1312-20 E. 13th St., Los Angeles, Cal.

G & O Mfg. Co., New Haven, Conn. (See page 775.)

Everything is listed under the NOUN or principal word



NATIONAL CELLULAR TYPE

An Unusual Ford Radiator For Trucks and Delivery Cars

BUILT along standard Ford truck radiator lines and will stand excessive abuse without breakage. It is specially constructed to put up with just the type of hard service that Ford trucks and delivery cars are usually put to.

Both water tanks, top and bottom, are made of extra heavy gauge material. The cellular Zig Zag cores are bolted to both of these tanks. In fact, the construction throughout the whole radiator denotes strength.

Dividend pay trucks are only possible through the use of parts capable of contributing to the whole. National Cellular type Radiators are dividend payers. They wear longer and give better service.

Price of radiator \$40.00 F. O. B. Detroit. Write us direct for details or name of our nearest dealer.

DEALERS

This is just the type of Ford Radiator that truck owners have been asking for. Write us to explain our attractive agency proposition. Full information supplied upon request.

NATIONAL CAN COMPANY

Radiator Division

Detroit, Michigan, U. S. A.

Please mention The Automobile Trade Directory

RADIATORS, Aircraft Water Cooling (Continued)

- Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
- Harrison Radiator Corp., Washburn & Walnut Sts., Lockport, N. Y.
- Herkules—See Lockport Radiator Co.
- Ideal Sheet Metal Works, 218 N. Morgan St., Chicago, Ill.
- Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.
- K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
- Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J.
- Lober Radiator & Mfg. Co.—See Quinn Co.
- Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
- Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
- McCord Mfg. Co., Detroit, Mich.
- Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
- Motor Radiator Co., 1239 N. 12th St., Philadelphia, Pa.
- Omaha Auto Radiator Mfg. Co., 1819-21 Cum-ling St., Omaha, Neb.
- Perfection—See Ajax Auto & Aero Sheet Metal Co.
- Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 775.)
- Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 741.)
- Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
- Rome-Turney Radiator Co., Rome, N. Y. (See page 781.)
- Steidle Mfg. Co., P. O. Box 173, Cincinnati, O. (See page 781.)
- Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
- United States Cartridge Co., Lowell, Mass. (See page 773.)
- Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
- Zig Zag—See Auto Radiator Mfg. Co.
- RADIATORS, DUMMY, FOR FORDS—See Hooda, Radiator**
- RADIATORS, Tractor Water Cooling**
- Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
- Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig-Zag."
- B & W Mfg. Co., 5235 Ravenswood Ave., Chicago, Ill.
- Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.
- Bremer Mfg. Co., 850 S. Canal St., Chicago, Ill.
- Bush Mfg. Co., Hartford, Conn. (See page 787.)
- Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 633.)
- Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.
- Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 781.)
- English & Mersick Co., New Haven, Conn. (See page 571.)
- Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 115.)
- Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.
- Fedders Mfg. Co., Buffalo, N. Y. (See page 789.)
- Flexo Mfg. Co., 1812-20 E. 12th St., Los Angeles, Cal.
- G & O Mfg. Co., New Haven, Conn. (See page 775.)
- Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
- Herkules—See Lockport Radiator Co.
- Ideal Sheet Metal Works, 218 N. Morgan St., Chicago, Ill.
- K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
- Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
- Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
- Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J.
- Lober Radiator & Mfg. Co.—See Quinn Co.
- Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
- Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
- Long Mfg. Co., Detroit, Mich. (See page 787.)
- McCord Mfg. Co., Detroit, Mich.
- Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.
- Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
- Medway Sales Corp., Baker Bldg., Racine, Wis. (Sole Distributors for Splitex Radiator Co., Racine, Wis.)
- Modine Mfg. Co., Racine, Wis. "Spirex"
- National Can Co., Detroit, Mich. "Zig-Zag." (See page 765.)
- Omaha Auto Radiator Mfg. Co., 1819-21 Cum-ling St., Omaha, Neb.
- Perfection—See Ajax Auto & Aero Sheet Metal Co.
- Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 775.)
- Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 741.)
- Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
- Rome-Turney Radiator Co., Rome, N. Y. (See page 781.)
- S-J—See Shotwell-Johnson.
- Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 349.)
- Sparks-Withington Co., Jackson, Mich. "Sparton."
- Sparton—See Sparks-Withington Co.
- Spirex—See Modine Mfg. Co.
- Splitex Radiator Co.—See Medway Sales Corp.
- Standard Radiator Co., Main St., Springfield, N. Y.
- Steidle Mfg. Co., P. O. Box 173, Cincinnati, O. (See page 781.)
- Todd Mfg. Co., 1214 N. 12th St., Minneapolis, Minn.
- United States Cartridge Co., Lowell, Mass. (See page 773.)
- Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
- Wheeler Radiator & Mfg. Co., 1637-39 Collamer Ave., E. Cleveland, O. (See page 571.)
- Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
- Zig-Zag—See National Can Co.

Everything is listed under the NOUN or principal word

LONG COOLING SYSTEMS

*The Recognized Standard for
Motor Cars, Trucks and Tractors*

*Illustration is a
recent design cre-
ated for Graham
Brothers, Evans-
ville, Indiana.*



Many automotive manufacturers have found that it isn't necessary to experiment in the matter of radiation at all. The Long Cooling System's

19 Years' Experience,

its group of specializing engineers, its practical and freely offered counsel and advice, may be had at any time and all difficulties and disappointments be overcome in advance.

Submit Your Radiation Problems to Us

LONG MANUFACTURING CO., Detroit, Mich.
Pioneer Makers of Cooling Systems for Gasoline Engines

RADIATORS, Water Cooling

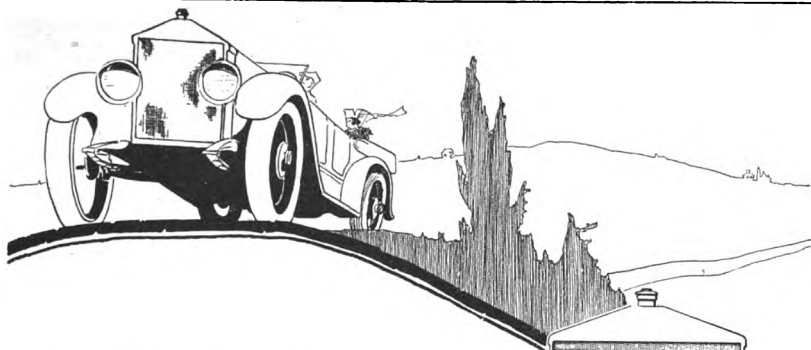
Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
Ansted Co., 600 W. 57th St., New York, N. Y. (See page 771.)
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Flexo."
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
 B & W Mfg. Co., 5235 Ravenswood Ave., Chicago, Ill.
 Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.
 Bremer Mfg. Co., 850 S. Canal St., Chicago, Ill.
Bush Mfg. Co., Hartford, Conn. (See page 787.)
C. A. S. Radiator Co.—See C. A. S. Engineering Co.
 C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for C. A. S. Radiator Co., Jackson, Mich.)
Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 633.)
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.
Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 781.)
English & Mercick Co., New Haven, Conn. (See page 671.)
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 115.)
 Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.
Fedders Mfg. Co., Buffalo, N. Y. (See page 789.)
 Federal Radiator Co., Zanesville, O.
 Flexo—See Auto Radiator Mfg. Co.
 Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.
G & O Mfg. Co., New Haven, Conn. (See page 775.)
 Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
 Harrison Radiator Corp., Washburn & Walnut Sts., Lockport, N. Y.
 Herkules—See Lockport Radiator Co.
Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.
 Improved Radiator Co., 3833 S. State St., Chicago, Ill.
Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 686.)
Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.
K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J.
Lober Radiator & Mfg. Co.—See Quinn Co.
 Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
 Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
Long Mfg. Co., Detroit, Mich. (See page 767.)
 McCord Mfg. Co., Detroit, Mich.

McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
Maco—See Automotive Sheet Metal Co.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
Martin Metal Mfg. Co., Wichita, Kans.
 Medway Sales Corp., Baker Bldg., Racine, Wis. (Sole Distributors for Splitex Radiator Co., Racine, Wis.)
Modine Mfg. Co., Racine, Wis. "Spirex."
 Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
N. J. Lamp Works (Radiator Dept.), Newark, N. J. "Premier." (See page 633.)
National Can Co., Detroit, Mich. "Zig-Zag." (See page 765.)
 Omaha Auto Radiator Mfg. Co., 1819-21 Cum-ling St., Omaha, Neb.
 Perfection—See Ajax Auto & Aero Sheet Metal Co.
Perfex Radiator Co., Flett Ave., Racine, Wis. (See page 775.)
 Premier—See N. J. Lamp Works.
Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 741.)
Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
Rome-Turney Radiator Co., Rome, N. Y. (See page 781.)
 S-J—See Shotwell-Johnson.
Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.
Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 349.)
 Sparks-Withington Co., Jackson, Mich. "Sparton."
 Sparton—See Sparks-Withington Co.
 Spirex—See Modine Mfg. Co.
Splitex Radiator Co.—See Medway Sales Corp.
 Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.
 Standard Radiator Co., Main St., Springville, N. Y.
 Steidle Mfg. Co., P. O. Box 173, Cincinnati, O. (See page 781.)
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 United Radiator Co., 150 N. Broad St., Philadelphia, Pa.
 United States Cartridge Co., Lowell, Mass. (See page 773.)
Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.
 Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
Wheeler Radiator & Mfg. Co., 1637-39 Coliseum Ave., E. Cleveland, O. (See page 571.)
Wright Cooler & Hood Mfg. Co., 4865-70 N. Clark St., Chicago, Ill.
 Zig-Zag—See National Can Co.

RADIATORS, Water Cooling, for Fords (Regular and V Type)

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig Zag," "Ex-L."
 Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.
 Bulldog—See Livingston Radiator Corp.
Candler Radiator Co., 1084-86 Jefferson Ave., E. Detroit, Mich. (See page 633.)

Everything is listed under the NOUN or principal word



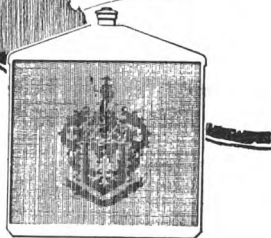
THE quality and distinctiveness of a fine motor car can best be accentuated by the use of an ANSTED RADIATOR.

No one unit in the composition of the car can do more to create a favorable interest in the product, and then by consistent performance retain that interest through years of satisfied ownership.

The pace in the automobile industry is altogether too fast for any manufacturer to make a habit of a source of supply. He owes it to his entire organization and to his trade to investigate any proposition that may enhance the value of his product.

And since the words MODERN and OBSOLETE as applied to the motor car span a gap measured in hours and minutes, no one thing is better calculated to differentiate the Modern car of tomorrow from the Obsolete car of today than is an Ansted Radiator.

Our production facilities enable us to quote prices differing so little from prices quoted on a mediocre product, that a proposition from us should meet with your most favorable consideration.



ANSTED RADIATORS

A Quality Product

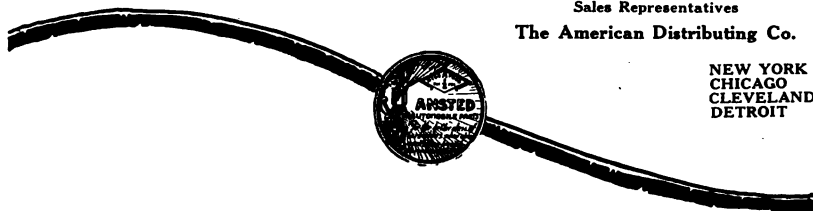
—“for the better class of car builders whose vision carries them beyond the commonplace”—

THE ANSTED COMPANY, Inc. 600 WEST 57th ST., NEW YORK CITY.

Sales Representatives

The American Distributing Co.

NEW YORK
CHICAGO
CLEVELAND
DETROIT



Please mention The Automobile Trade Directory

RADIATORS, Water Cooling for Fords (Regular and V-Type) (Continued)

Columbia Auto Radiator Co., 902-06 Race St., Cincinnati, O.
Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."
Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 781.)
Doric—See Motor Truck Radiator & Mfg. Co.
El Arco Radiator Co., West End Ave. & 64th St., New York, N. Y.
Emco—See Motor Truck Radiator & Mfg. Co.
Ex-L—See Auto Radiator Mfg. Co.
Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.
Feeders Mfg. Co., Buffalo, N. Y. (See page 789.)
Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.
Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 251.)
G & O Mfg. Co., New Haven, Conn. (See page 775.)
Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
Herkules—See Lockport Radiator Co.
Holm Radiator Corp., 340 First Ave., Milwaukee, Wis. (See page 775.)
Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.
Improved Radiator Co., 3833 S. State St., Chicago, Ill.
Jackson Auto Radiator Works, 664-68 Washington Blvd., Chicago, Ill.
Jaffe Radiator Co., 14 E. Jackson Blvd., Chicago, Ill. (See page 775.)
Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.
K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J. "Bulldog."
Lober Radiator & Mfg. Co.—See Quinn Co.
Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
Modine Mfg. Co.—See Zinke Co.
Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
Motor Truck Radiator & Mfg. Co., 255 W. 58th St., New York, N. Y. "Emco," "Doric."
N. J. Lamp Works (Radiator Dept.), Newark, N. J. "Premier." (See page 633.)
National Can Co., Detroit, Mich. "Zig-Zag." (See page 765.)
Omaha Auto Radiator Mfg. Co., 1819-21 Cumming St., Omaha, Neb.
Peerless—See Corcoran Mfg. Co.
Perfection—See Ajax Auto & Aero Sheet Metal Co.
Perfix Radiator Co., Flett Ave., Racine, Wis. (See page 775.)
Premier—See N. J. Lamp Works.
Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.) (See page 741.)
Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
Rome-Turney Radiator Co., Rome, N. Y. (See page 781.)
S-J.—See Shotwell-Johnson.

Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.
Shotwell-Johnson, Minneapolis, Minn. "S. J." (See page 349.)
Sparks-Withington Co., Jackson, Mich. "Sparton."
Sparton—See Sparks-Withington Co.
Spirex—See Zinke Co.
Standard Radiator Co., Main St., Springville, N. Y.
Steddie Mfg. Co., P. O. Box 173, Cincinnati, O. (See page 781.)
Superford—See Superior Lamp Mfg. Co.
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y. "Superford."
Todd Mfg. Co., 12-14 N. 13th St., Minneapolis, Minn.
Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.
Waterbury Auto Radiator Co., 453 W. Main St., Waterbury, Conn.
Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
Witte Auto Radiator Corp., 2237 Hampden Ave., St. Paul, Minn.
Wright Cooler & Hood Mfg. Co., 4863-70 N. Clark St., Chicago, Ill.
Zig Zag—See Auto Radiator Mfg. Co.
Zig Zag—See National Can Co.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Modine Mfg. Co., Racine, Wis. "Spirex.") (See page 690.)

RADIATORS, WATER COOLING AIR- CRAFT—See Radiators, Aircraft Water Cooling

RADIATORS, WATER COOLING TRACT- OR—See Radiators, Tractor Water Cool- ing

RADIUS ROD CUSHIONS FOR FORDS— See Cushions, Radius Rod

RADIUS ROD SILENCERS FOR FORDS— See Anti-Rattlers, Radius Rod

RADIUS RODS FOR FORDS—See Rods, Radius

RAGS, WIPING—See Wipers

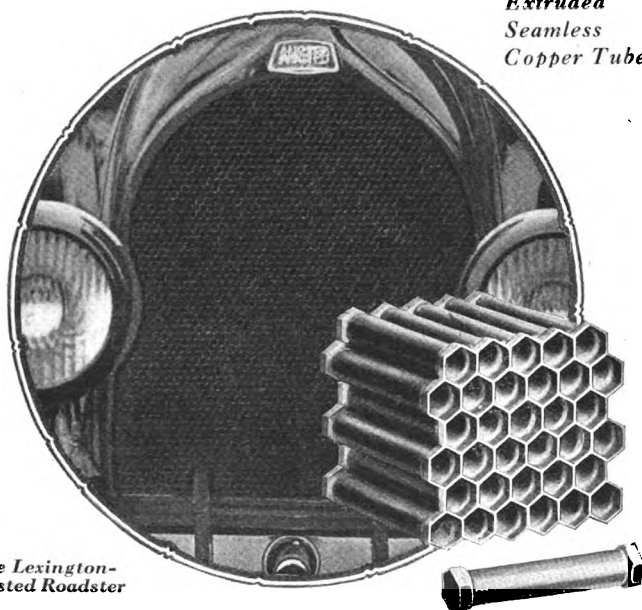
RAILS, COAT—See Rails, Robe or Coat

RAILS, FOOT—See Rests or Rails, Foot

RAILS, Robe or Coat

(Metal rolls or leather or fabric straps for attaching to back of front seats to hold rods or coats)
Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
Allen Fire Department Supply Co., Providence, R. I.
American Brass Novelty Co., Grand Haven, Mich.
Amesbury Brass & Foundry Co., Amesbury, Mass.
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Utility." (See page 371.)
Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
Bantlin Co., Julius J., Cincinnati, O.
Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Capitol Brass Works, 2306 Franklin St., Detroit, Mich.

Everything is listed under the NOUN or principal word



The Lexington-Ansted Roadster

"For the Life of the Car"

The words "Modern" and "Obsolete," as applied to automobiles, span a gap that is measured today in hours and minutes.

Do you know the newest, the most advanced type of radiator—the radiator used today on the leading European motor cars?

Look at the picture above, and you will see this radiator, together with a "close-up" showing the seamless copper tubes of which it is built.

These seamless tubes are extruded, a patented process that insures strength and uniformity. The ends are expanded to a

hexagonal shape, then the tubes are laid together and the ends soldered.

This radiator is strong, rigid, proof against corrosion from alkali water. If an accident occurs, it is easy to replace damaged tubes without taking the radiator down.

The Ansted Company, of New York, manufacturers of only the highest types of radiators, think so well of these *extruded* tubes that they have adopted them for the manufacture of radiators which they guarantee for the life of the car.

Write us for the name of the agency nearest you.

UNITED STATES  CARTRIDGE CO.
LOWELL, MASS.

Please mention The Automobile Trade Directory

RAILS, Robe or Coat (Continued)

Carter Co., George R., Connorsville, Ind.
 Central Brass & Fixture Co., Segler & Hughes
 Sts., Springfield, O.
 Columbus Brass Co., 540 Dublin Ave., Colum-
 bus, O.
 Cowles & Co., C., New Haven, Conn.
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 171.)
 Detroit Automotive Corp., Real Estate Ex-
 change Bldg., Detroit, Mich. "Thef Pruf."
 Douglas & Lomason Co., 5336 Lincoln Ave.,
 Detroit, Mich.
 English & Mersick Co., New Haven, Conn.
 (See page 571.)
 Enterprise Brass & Plating Co., Sixth & Bay-
 miller Sts., Cincinnati, O.
 Ford-Clark Co., 3125 Perkins Ave., Clevel-
 and, O.
 Gemco Mfg. Co., 606 S. Pierce St., Mil-
 waukee, Wis. (See pages 172 and 173.)
 Highton & Sons Co., Wm., Nashua, N. H.
 Hunt & Co., E. J., Equity Bldg., Dayton, O.
 (Sales Representatives for Thomson Mfg.
 Co., S. H., Dayton, O.)
 Imperial Brass Mfg. Co., 1234 W. Harri-
 son St., Chicago, Ill. (See page 177.)
 Indianapolis Saddlery Co., 237 S. Meridian St.,
 Indianapolis, Ind.
 Jonah & George, Little's Ct., Merrimac, Mass.
 Keeler Brass Co., 251-71 Godfrey Ave., Grand
 Rapids, Mich.
 Leather Parts Co., 1619-21 Prospect St.,
 Indianapolis, Ind.
 Meyer Scale & Hardware Co., 328 Adams St.,
 Newark, N. J.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Monarch Carriage Goods Co., Marshall &
 Spring Grove Ave., Cincinnati, O.
 (See page 399.)
 Neidhardt & Co., C., 31 N. Water St., Roches-
 ter, N. Y.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St.,
 New York, N. Y.
 Pfau Mfg. Co., Cincinnati, O.
 Robe Rail Sales Corp., 1776-78 Broadway, New
 York, N. Y.
 Rostand Mfg. Co., Milford, Conn.
 Schlegel Mfg. Co., 277 N. Goodman St., Roch-
 ester, N. Y.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd.,
 Detroit, Mich.
 Sterling—See Auto Accessories Mfg. Co.
 Sutherland Co., F. L., 139 Beaubien St.,
 Detroit, Mich. (See page 609.)
 Thef Pruf—See Detroit Automotive Corp.
 Thomson Mfg. Co.—See Hunt & Co.
 Utility—See Armand Machine Works.
 Wagner Mfg. Co., E. R., North Milwaukee,
 Wis. (See page 805.)
 Wakefield Sales Co., Trempealeau, Wis.
 Waterhouse & Freeman Mfg. Co., 319 N. J. R.
 E. Ave., Newark, N. J.
 Western Brass Mfg. Works, Marshall
 Blvd. & 21st St., Chicago, Ill.
 (See page 263.)
 White Mfg. Co., 155 Cannon St., Bridgeport,
 Conn.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St.,
 Newark, N. J. (See page 79.)

RAILS, Robe or Coat, for Fords
*(Metal rails or leather or fabric straps for attaching to
 back of front seats to hold robes or coats)*
 Attwood Brass Works, Grand Rapids,
 Mich. (See page 479.)
 Brooksmith Mfg. Co., 1856-60 Menard St., St.
 Louis, Mo.
 Dependable—See Gahm-McCormick Co.

Edelmann & Co., H., 2638 N. Crawford Ave.,
 Chicago, Ill.
 Ford-Clark Co., 3125 Perkins Ave., Clevel-
 and, O.
 Gahm-McCormick Co., 806 E. Main St.,
 Streator, Ill. "Dependable."
 (See page 249.)
 Gemco Mfg. Co., 606 S. Pierce St., Mil-
 waukee, Wis. (See pages 172 and 173.)
 Humboldt—See Republic Auto Parts Co.
 Ideal Brass Works, 560 N. Elder Ave., In-
 dianapolis, Ind.
 Monarch Carriage Goods Co., Marshall &
 Spring Grove Ave., Cincinnati, O.
 (See page 399.)
 Proos Mfg. Co., Grand Rapids, Mich.
 Republic Auto Parts Co., 81-85 Tenth St.,
 Long Island City, N. Y. "Humboldt."
 Wakefield Sales Co., Trempealeau, Wis.
 Western Brass Mfg. Works, Marshall
 Blvd. & 21st St., Chicago, Ill.
 (See page 263.)

RAIN COATS—See Clothing, Motorists'

**RAIN SHIELDS—See Visors, Top; also
 Visors, Wind Shield**

RAISING SKIDS—See Skids, Car Raising

RASPS AND FILES—See Files and Rasps

RATCHET DRILLS—See Drills, Ratchet

**RATCHET PEDALS—See Pedals, Horn
 and Cut-out**

**RATCHET PINS FOR FORDS—See Pins,
 Crank Ratchet**

**RAWHIDE GEARS—See Gears and Pin-
 ions, Rawhide**

**RAWHIDE PINIONS—See Gears and Pin-
 ions, Rawhide**

**REAL ESTATE BROKERS—See Brokers,
 Real Estate**

**REAMER GRINDERS — See Grinders,
 Reamer**

**REAMERS, ADJUSTABLE—See Reamers,
 Standard**

**REAMERS, BATTERY CONNECTOR—See
 Tools, Storage Battery Repair**

**REAMERS, BEARING, FOR FORDS—See
 Reamers, Main Bearing**

**REAMERS, BUSHING FOR FORDS—See
 Reamers, Drive Shaft Bushing; also Ream-
 ers, Piston Bushing; also Reamers,
 Transmission Bushing**

**REAMERS, CONNECTING ROD, FOR
 FORDS—See Reamers, Main Bearing**

**REAMERS, CYLINDER FOR FORDS—See
 Reamers and Jigs, Cylinder**

**REAMERS, Drive Shaft Bushing for
 Fords**

Hinckley-Myers Co., Water St., Jackson, Mich.
 Willson, K. R., 10-16 Lock St., Buffalo,
 N. Y. (See page 247.)

Alvord Reamer & Tool Co., Millersburg,
 Pa. (See page 835.)

Detroit Garage Equipment Co., 406 E. Jeffer-
 son Ave., Detroit, Mich.

Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis,
 Minn.

Everything is listed under the NOUN or principal word

*“—because
of Quality”*

Diagonal Honeycomb Core
Square Wireless Honey-
comb Core

Mercedes Honeycomb Core
Square Fin Tubular Core

G&O
Radiators

THE G & O MFG. CO.
New Haven :: Conn.

828 N. Broad St., Philadelphia, Pa.
1512 Kresge Bldg., Detroit, Mich.

PERFEX
THE PERFECT RADIATOR

Direct cooling systems of highest quality, built by specialists. Efficient service guaranteed by nine years of past performance. Submit your specifications. Our engineering department is at your service.

PERFEX RADIATOR COMPANY
Flett Avenue, Racine, Wisconsin

San Francisco
Motive Products Co.
604 Mission St.

HOLM MULTI-CHANNEL RADIATOR



38 Individual water channels; larger water area; will not clog; reinforced water passes; all brass is **rolled**—not stretched thru stamping; lock-seamed joints, automatically dipped in solder; tested under air pressure; packed in strong wooden boxes.

Write for detailed information
HOLM RADIATOR CORPORATION
340 First Avenue, Milwaukee, Wisconsin



What other
Radiator can
claim these
features?

1. Not injured by repeated freezing.
2. Not injured by overheating.
3. Will not boil over.
4. Flexible Core Construction.
5. Not injured by vibration or severe strains.
6. Rolled brass water tubes.
7. Will not clog.
8. A positive written guarantee back of every claim.

JOBBERS AND DEALERS

The Jaffe is a radiator with real selling points. Write to us tonight for complete information. It will interest you.

JAFFE RADIATOR COMPANY

14 E. Jackson Blvd., Chicago, Ill.

Please mention The Automobile Trade Directory

REAMERS, Main Bearing and Connecting Rod, for Fords

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 619 to 622.)
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)
 Lewis Tool Co., 612 Fifth Ave., S., Minneapolis, Minn.
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
Railway Specialty Co., Atchison, Kans. "Rysco."
 Rysco—See Railway Specialty Co.
 Universal Tool Co., Garwood, N. J. (See page 971.)
 Uto—See Universal Tool Co.
 Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.
Wilson, K. R., 10-16 Look St., Buffalo, N. Y. (See page 247.)

REAMERS, Piston Bushing for Fords

American—See Fairbanks Co.
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 777.)
 Critchley—See Chadwick & Trefethen.
Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Service Station Equipment Co.—See Fairbanks Co.
 Tribune Engineering Co., Front St., Owego, N. Y.

REAMERS, Standard and Adjustable

Acme—See Schellenbach-Hunt Tool Co.
 Adamantine—See American Tap & Die Co.
 Alvord Reamer & Tool Co., Millersburg, Pa. (See page 835.)
 American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampeco."
 American Tap & Die Co., Greenfield, Mass. "Adamantine." (See page 915.)
 Ampeco—See American Machine Products Co.
 Arrow Tool & Reamer Co., 422 Artillery Ave., Detroit, Mich.
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
 Blancke Twist Drill & Tool Co.—See Blancke Co.
 Brubaker & Bros., W. L., 50 Church St., New York, N. Y.
 Butterfield & Co., (Division of Union Twist Drill Co.), Derby Line, Vt.
Cashman Tool Co., Waynesboro, Pa. (See page 683.)
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 777.)
Cleveland Twist Drill Co., Cleveland, O. "Paradox," "Peerless." (See page 365.)
 Clough, R. M., Tolland, Conn.
 Critchley—See Chadwick & Trefethen.
 Critchley—See Lancaster Sales Co.
 Cruban Machine & Steel Corp., 63 Duane St., New York, N. Y.
 Davis Boring Tool & Mfg. Co., 3700 Forest Park Blvd., St. Louis, Mo.
Detroit Reamer & Tool Co., Detroit, Mich. (See page 777.)

Detroit Twist Drill Co., Detroit, Mich. (See page 777.)

Diamond—See Whitman & Barnes Mfg. Co.
 G. M.—See General Machine Works.

Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 General Machine Works, Lamour & Prospect Sts., York, Pa. "G. M."

Gisholt Machine Co., 1315 E. Washington Ave. Madison, Wis.

Goddard & Goddard Co., 4724 Hastings St., Detroit, Mich.

Greenfield Tap & Die Corp., Greenfield, Mass. "Hercules." (See page 915.)

Hercules—See Greenfield Tap & Die Corp.

Ideal—See McCrosky Tool Co.

Illinois Tool Works, 154 E. Erie St., Chicago, Ill.

Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)

Lancaster Sales Co., 267 Woolworth Bldg., Lancaster, Pa. (Sole Distributors for Beard Tool Co., L. O., Lancaster, Pa. "Lritchley.") (See page 821.)

Lincoln Twist Drill Co., Arlington St., Taunton, Mass.

McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.

McCrosky Tool Corp., Meadville, Pa. "Ideal."
 Martell—See Taft-Peirce.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Millersburg Reamer & Tool Co., Millersburg, Pa.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Machine Co., 5 Harvard St., New Britain, Conn.

Ohio Reamer Co., 5337 St. Clair Ave., Cleveland, O.

One Lock Reamer Co., New Haven, Conn.

P & G Tool Co., 36 Oliver St., Boston, Mass.

Paradox—See Cleveland Twist Drill Co.

Peerless—See Cleveland Twist Drill Co.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.

Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 269.)

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)

Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobber.) (See page 365.)

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1170.)

Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.

Schellenbach-Hunt Tool Co., 130 Opera Pl., Cincinnati, O. "Acme."

Screw Machine Products Corp., 1013 Eddy St., Providence, R. I.

Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. "Sure-Mike." (Dealers.) (See pages 637 and 651.)

Standard Tool Co., 6900-14 Central Ave., Cleveland, O.

Stapf & Co., John B. Dunkirk, N. Y.

Sure-Mike—See Staff, J. Wadsworth.

Taft-Peirce Mfg. Co., Woonsocket, R. I. "Martell."

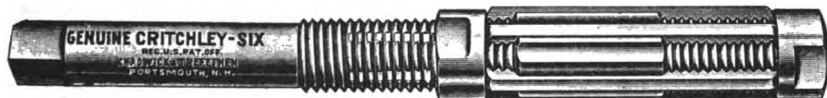
Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.

Wetmore Reamer Co., 27th & St. Paul Sts., Milwaukee, Wis.

Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond."

Everything is listed under the NOUN or principal word

GENUINE CRITCHLEY-SIX ADJUSTABLE REAMERS



are equipped with Semi-High Speed Steel Blades that fit, and can be re-fitted by the user.

Beware of Imitations

CHADWICK & TREFETHEN

Portsmouth, N. H.

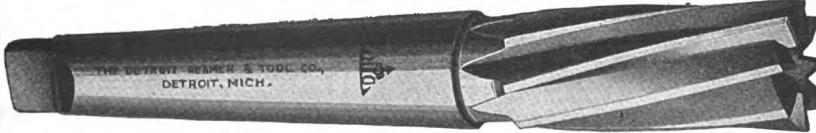
DETROIT TWIST DRILLS

REAMERS, CUTTERS
SPECIAL TOOLS ETC



USED ALMOST
EXCLUSIVELY
BY MANY OF
THE LARGEST
AUTOMOBILE
PARTS AND
ACCESSORY
FACTORIES

DETROIT TWIST DRILL CO
DETROIT - MICHIGAN



REAMERS, CUTTERS, SPECIAL TOOLS
THE DETROIT REAMER & TOOL CO.
DETROIT, MICHIGAN

Please mention The Automobile Trade Directory

REAMERS, Transmission Bushing, for Fords

Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 777.)
 burg, Pa. (See page 925.)
 Critchley—See Chadwick & Trefethen.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Tribune Engineering Co., Front St., Owego, N. Y.
 Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

REAMERS AND JIGS, Camshaft Aligning for Fords

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)

REAMERS and JIGS, Cylinder, for Fords

Alvord Reamer & Tool Co., Millersburg, Pa. (See page 835.)
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 777.)
 Critchley—See Chadwick & Trefethen.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 Foster-Johnson Reamer Co., 1072 Beardsley Ave., Elkhart, Ind. "Johnson."
 Johnson—See Foster-Johnson Reamer Co.
 Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)
 Tribune Engineering Co., Front St., Owego, N. Y.

REAMING BUSHINGS—See Bushings, Drilling and Reaming**REAR AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease****REAR AXLE REPAIR STANDS FOR FORDS—See Stands, Rear Axle Repair****REAR AXLE SHAFTS—See Shafts, Rear Axle****REAR AXLE SLEEVE PULLERS FOR FORDS—See Pullers, Axle Sleeve Bearing****REAR AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle****REAR AXLE TAPER SHIMS FOR FORDS—See Shims, Rear Axle Taper****REAR AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss****REAR AXLES—See Axles, Rear****REAR AXLES FOR FORDS—See Axles, Worm Drive Rear****REAR STARTERS, MOTOR BOAT—See Starters, Motor Boat, Rear Engine****REBABBITTING JIGS for Fords—See Jigs, Main Bearing and Connecting Rod Babbitting****REBORING MACHINES—See Machines, Cylinder Reborring; for Cylinder Reborring Tools—See Tools, Portable Cylinder Reborring****REBORING TOOLS—See Tools, Portable Cylinder Reborring****REBOUND STRAPS—See Straps, Rebound****RECEIVERS, ASH—See Receptacles, Ash****RECEPTACLES, Ash**

Maurer Co., O., 1317 Bushwick Ave., Brooklyn, N. Y. (See page 997.)

RECHARGERS, MAGNET—See Chargers, Magneto Magnet**RECORDERS, TIME—See Clocks, Watchman's****RECORDERS, Vehicle Movement**

(For recording time vehicle is used)

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Recordograf."
 Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Trafiog."
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Haggson & Co., S. H., Thames Bldg., New York, N. Y. "Joyometer."
 Joyometer—See Haggson & Co.
 Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.
 Recordograf—See American Taximeter Co.
 Sattler, Hans, Sheboygan, Wis.
 Service Recorder Co., 3144 E. 106th St., Cleveland, O. "Servis."
 Servis—See Service Recorder Co.
 Trafiog—See Brown Spring Oiler Co.

RECORDING BAROGRAPHS—See Barographs, Recording**RECORDING CLOCKS—See Clocks, Time Recording and Watchman's****RECTIFIERS, Alternating Current**

(For transforming alternating current to direct current for storage battery charging)

Ab-rec—See American Battery Co.
 Advance Electric Co., 131 E. Sixth St., Los Angeles, Cal.
 American Battery Co., 1123-34 Fulton St., Chicago, Ill. "Amrec," "Ab-rec."
 Amreo—See American Battery Co.
 Beacon Rectifier Co., 6 Dell Terrace, Boston, Mass.
 Cambridge—See Clapp-Eastham Co.
 Clapp-Eastham Co., 129 Main St., Cambridge, Mass. "Cambridge."
 Electric Products Co., Cleveland, O. "Wotton." (See page 375.)
 Electro Rectifier Co., 739 Polk St., San Francisco, Cal.

Everything is listed under the NOUN or principal word

A Tungar for Every Use

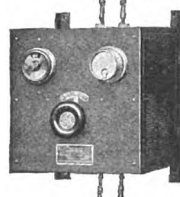
Storage batteries may be charged from any alternating current circuit with a Tungar. This battery charger, simple, low priced, and highly efficient is made in capacities to suit various needs. It has been approved by the National Board of Fire Underwriters.

The 12-ampere 75-volt Tungar charges one to ten 6-volt batteries at 12 amperes or less, or one to twenty 6-volt batteries at 6 amperes or less. It measures but 15" by 12" by 13" in size, thus taking up but little wall space.



Twenty Battery Set

The 6-ampere 75-volt Tungar charges one to ten 6-volt batteries at 6 amperes or less. It is slightly smaller than the 20-battery set from which it differs only in capacity.



Ten Battery Set

The 5-ampere 30-volt Tungar charges one to four 6-volt batteries at 5 amperes or less. This is known as the 4-battery set and is ideal for the small garage where a higher investment in battery charging equipment would not be justified.



Four Battery Set

The 5-ampere 7.5-volt Tungar charges one 6-volt battery at 5 amperes or one 12-volt battery at 3 amperes or one 18-volt battery at 1.5 amperes. There is also a 2-ampere Tungar for charging a 6-volt battery at 2 amperes or a 12-volt battery at one ampere.

Bulletin Y-1457 sent on request



One Battery Set

General Electric Company

General Office
Schenectady, N.Y.

Sales Offices in
all large cities

35A-61

RECTIFIERS, Alternating Current
(Continued)

F. F.—See France Mfg. Co.
 Fore Electrical Mfg. Co., 5355 N. Market St., St. Louis, Mo.
 France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."
 General Electric Co., Schenectady, N. Y. "Tungar." (See page 779.)
 Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.
 Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.
 Murphy Electricity Rectifier Co., 187 N. Water St., Rochester, N. Y.
 Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.) (See page 177.)
 Sirch Electrical & Testing Laboratories, 126 W. Third St., Los Angeles, Cal.
 Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill.
 Tungal—See General Electric Co.
 United Electric Apparatus Co., 1529 Columbus Ave., Boston, Mass.
 Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 375.)
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Wotton—See Electric Products Co.

RECTIFIERS, Alternating Current, for Fords

Small chemical rectifier to be attached to the car to permit the charging of storage batteries from the motor.

Illinois Starter & Magneto Co., 2450 Calumet Ave., Chicago, Ill.

REDUCING VALVES OR REGULATORS—
See Regulators, Acetylene Pressure**REEDS, Horn**

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J.

REEL LIGHTS—See Lamps, Electric Hand or Inspection; also Lights, Spot

REELS, Automatic Extension Lamp

Alert Sales Corp., Carter Bldg., Rochester, N. Y. (Sole Distributors for Fitt Machine Co., Jas., Rochester, N. Y. "Clark.")

Anderson Electric & Equipment Co., 154-60 Whiting St., Chicago, Ill. "Reelite." (See page 510.)

Autex—See Cincinnati Specialty Mfg. Co.
 Cincinnati Specialty Mfg. Co., 1911 Fowers St., W., Cincinnati, O. "Autex." (See page 633.)

Clark—See Alert Sales Corp.
 Fitt Machine Co., Jas.—See Alert Sales Corp.
 Reelite—See Anderson Electric & Equipment Co.

REELS, Automatic Hose

Eco—See Western Mfg. Co.
 Western Mfg. Co., Sixth Ave., E. & S. Third St., Okaloosa, Ia. "Eco."

Wilkinson, A. L., 811 Dime Bank Bldg., Detroit, Mich. (See page 1001.)

REFACERS, VALVE—See Tools, Valve Re-seating

REFLECTING MIRRORS, COWL LIGHT—See Mirrors, Cowl Light Reflecting

REFLECTORS, GAGE GLASS—See Mirrors, Water Gage

REFLECTORS, HEADLIGHT—See Reflectors, Mirror Lamp

REFLECTORS, Headlight, for Fords

(Parabolic Reflectors for electric lights)

C-S—See Culver-Stearns Mfg. Co.
 Columbus Auto Brass Co., Columbus, O. (See page 477.)
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "C-S." Reflectors.) (See page 243.)
 Full-Ray—See Teepell, Edward A.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)
 Teepell, Edward A., 1523 N. 63d St., Philadelphia, Pa. "Full-Ray."
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

REFLECTORS, LAMP—See Reflectors, Mirror Lamp

REFLECTORS, Mirror Lamp

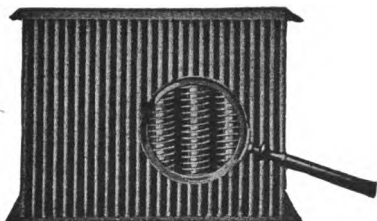
(For special dimming reflectors—See Dimmers)

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.
 Bausch & Lomb Optical Co., St. Paul & Smith Sts., Rochester, N. Y.
 Fry Glass Co., H. C., Rochester, Pa.
 Jefferson Glass Co., State St., Follansbee, W. Va.
 Lancaster Lens Co., 230-26 W. Main St., Lancaster, O.
 Macbeth-Evans Glass Co., Pittsburgh, Pa. (See page 353.)
 Matisse Corp., C. & A., 543-49 E. 116th St., New York, N. Y.
 Standard Glass Specialty Co., Morgantown, W. Va.

REGISTERS, Autographic and Manifold

American Sales Book Co., 631 Magee St., Elmira, N. Y.
 Autographic Register Co., Tenth & Clinton Sts., Hoboken, N. J. "Shouperior."
 Automatic Bookkeeping Register Co., 18th & Wyandotte Sts., Kansas City, Mo.
 Champion Register Co., 6921 Colfax Rd., Cleveland, O.
 Eery Register Co., 489 E. Monument St., Dayton, O.
 Globe Register Co., 2412-20 Reading Rd., Cincinnati, O.

Everything is listed under the NOUN or principal word



Superior Radiation

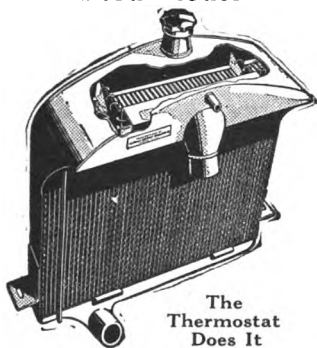
THE truck or tractor equipped with Rome-Turney Helical Tube Radiator can be depended on to be free from all cooling system troubles.

Rome-Turney Radiators are guaranteed for the life of the truck or tractor.

Write for Catalog

ROME-TURNEY RADIATOR CO., ROME, NEW YORK

Ford Model



The
Thermostat
Does It

The CURRAN

An All Year Radiator

From 15 degrees below zero to 100 above—a range of 115 degrees. The Curran is the one radiator built having this range of temperature in mind. Its construction permits solid freezing without injury—its angle strike and simplified thermostatic control regulates the flow of the water to the cooling requirements of the engine (note cut away illustration of our patent circulation control). Special construction adaptable to Ford trucks and delivery cars.

DEALERS—Write us to-day for our exclusive agency proposition. Our method of dealing directly with you facilitates service and insures maximum dealer profits.

A Year's Written Factory Guarantee

"Freezing Is Harmless—Overheating Impossible"

Curran-Detroit Radiator Co.

Automotive Radiation Engineers

1984 W. Lafayette Blvd., Detroit



WHITE RADIATORS and CORES

are built to give service the year 'round under all climatic conditions. We solicit inquiries and blue prints.

.....

Agents and Dealers Wanted

to handle the new White radiators for Ford cars and trucks

STEIDLE MFG. COMPANY

(Sole Manufacturers)

P. O. Box 173

CINCINNATI, OHIO, U. S. A.

Please mention The Automobile Trade Directory

REGISTERS, Autographic and Manifold (Continued)

Hamilton Autographic Register Co., Hamilton O.
 K. & B. Register Co., Symmes Ave., Hamilton, O.
 McCaskey, Alliance, O.
 National Cash Register Co., Dayton, O. (See page 783.)
 Shouperior—See Autographic Register Co.
 Standard Register Co., Albany Ave. & Big Four Tracks, Dayton, O.
 Uarco—See United Autographic Register Co.
 United Autographic Register Co., 2316-40 W. 43d St., Chicago, Ill. "Uarco."

REGISTERS, Dashboard Purchase

(Device for attachment to dashboard to permit pencil record being kept of all purchases)

Auto-Memo Co., Lyric Bldg., Richmond, Va.

REGISTERS, MANIFOLD—See Registers, Autographic

REGRINDING OF BALL BEARINGS—See Bearings, Ball, Reground

REGRINDING OF CYLINDERS—See Cylinders, Regrinding of

REGULATORS, Acetylene Pressure or Reducing Valves

(For use with acetylene lamps or starters; See also Controllers, Acetylene Lamp)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.

REGULATORS, CARBURETOR, FOR FORDS—See Regulators, Thermostatic Carburetor

REGULATORS, Electric Light, for Fords

(For controlling the flow of current to headlights to prevent burning out of bulbs at high engine speeds)

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)
 Amco—See Aid Mfg. Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Brillite."
 Aske Moore Corp., 19 Lake Ave., N., Duluth, Minn.
 Banes & Muench, 70th Ave. & York Rd. (Oak Lane), Philadelphia, Pa.
 Brillite—See American Automobile Accessories Co.
 Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.
 Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa. (Sole Distributors for Tirrill Regulator Mfg. Co., Pittsburgh, Pa.)
 Constolite—See Detroit Starter Co.
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Detroit Starter Co., 124 E. Larned St., Detroit, Mich. "Constolite."

Dimit—See Suburban Lighting & Gas Engine Co.

Double Lite Sales Co., 139 N. Jefferson St., Peoria, Ill.

Even-Lite Mfg. Co., 539 S. Third St., Paducah, Ky.

Evenlite—See Valley Electric Co.

Fodrectifier—See Warnerlite Products Corp.

Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass.

Hastings Mfg. Co., 36 Mill St., Hastings, Mich. "Lite-a-Ford." (See page 573.)

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Lite-a-Ford—See Hastings Mfg. Co.

Magnestat—See St. Cloud Electrical Mfg. Co.

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)

Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.

Power Spark Intensifier Co., Watertown, S. Dak.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

St. Cloud Electrical Mfg. Co., St. Cloud, Minn. "Magnestat."

Suburban Lighting Co., Toledo, O. "Dimit." Sunlight System Co., 14 E. Jackson Blvd., Chicago, Ill.

Tirrill Regulator Mfg. Co.—See Clamert Mfg. Co.

Valley Electric Co., 3157 S. Kingshighway, St. Louis, Mo. (See page 375.)

Warnerlite Products Corp., Davenport, Iowa. "Fodrectifier."

Westphal, H. F., 3217 North Ave., Milwaukee, Wis.

Williams Mfg. Co., Clarksburg, W. Va. "Willson."

Wilson—See Williams Mfg. Co.

REGULATORS, HEADLIGHT, FOR FORDS—See Regulators, Electric Light

REGULATORS, LIGHT, FOR FORDS—See Regulators, Electric Light

REGULATORS, PRESSURE—See Regulators, Acetylene Pressure; also Regulators, Tank Pressure

REGULATORS, STEAM PRESSURE—See Controllers, Vulcanizer Steam Pressure

REGULATORS, Tank Pressure

(For regulating the pressure on gasoline or oil tanks when pressure is taken from the exhaust)

Buckeye—See Central Brass & Fixture Co.

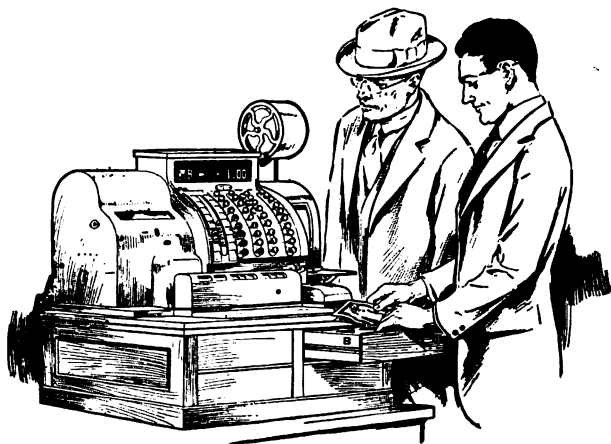
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenhimer Co., Beekman & Waverly Sts., Cincinnati, O.

Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word



Clerk B has made a cash sale for \$1.00

The indication at the top of an up-to-date National Cash Register gives publicity to every transaction. The merchant, the clerk, and the customer see this record.

This prevents mistakes in price and in making change. It removes temptation.

The record shown in the indication is printed on a slip of paper which is locked up inside the register. This record also is printed on a receipt for the customer.

The amounts indicated and printed are added into totals which show, at a glance, (1) the total business handled by each clerk, and (2) the total of each kind of transaction.

This assures the merchant that every sale is handled accurately. It also assures him of accurate records which give him control of his business.



This is the indication. "Ca" shows it was a cash sale. "B" is the clerk's initial. "1.00" is the price.

Charge sales are indicated by "Ch," received on account by "Rc," and paid out transactions by "Pd."

The same indication shows on both front and back of the register.

We make cash registers for every line of business. Priced \$75 and up.

NATIONAL

CASH REGISTER CO.

DAYTON, OHIO.

REGULATORS, Thermostatic, Carburetor, for Fords

(Thermostatic attachment to automatically adjust carburetor needle for all changes in temperature)

Automotive Products Co., Waukesha, Wis. "Thermix."

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)

Thermix—See Automotive Products Co.

REGULATORS, Water Circulating

(Thermostatic regulators for maintaining a constant temperature of the cooling water on gasoline cars; See also Shutters, Automatic Radiator. For hand-operated Regulators—See Valves, Water Circulation Regulating)

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield." (See page 193.)

Fulton Co., Knoxville, Tenn. "Sylphon."

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Rayfield—See Beneke & Kropf Mfg. Co.

Sylphon—See Fulton Co.

REGULATORS, Water Level

(For automatically maintaining the proper level of water in the boilers of steam cars)

Brookins Mfg. Co., Dayton, O.

REGULATORS, Window

(For opening and closing the windows in closed cars)

Clement—See Walker Body Co.

Cowles & Co., C., New Haven, Conn. "Fisher." Dura Mechanical Hardware Co., 2288-98 S. Albion Ave., Toledo, O.

Fisher—See Cowles & Co.

Liberty Works, Egg Harbor City, N. J. (See page 555.)

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Perfect Window Regulator Co., 20 Exchange Place, New York, N. Y. (See page 787.)

Straight Line Regulator Corp., 794 Seventh Ave., New York, N. Y.

Ternstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 785.)

Walker Body Co., Amesbury, Mass. "Clement."

RELEASE CLEAVES—See Hitches, Automatic Tractor

RELEASES, AUTOMATIC CRANK, FOR FORDS—See Cranks, Safety Starting

RELEASES, Clutch, for Fords

(For automatically releasing the clutch when the foot brake is applied)

Humboldt—See Republic Auto Parts Co.

Ideal Mfg. Co., 1525 Main St., Anderson, Ind.

McEwen, R. A., Natoma, Kans.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Perkins-Campbell Co., Cincinnati, O. (See page 115.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

RELEASES, CRANK FOR FORDS—See Cranks, Safety Starting

RELIEF COCKS—See Cocks; also Cups, Spring Key

RELINERS, TIRE—See Shoes, Inner Tire

REMAGNETIZERS, MAGNET—See Chargers, Magneto Magnet

REMOVABLE RIMS—See Rims, Demountable

REMOVERS, BUSHING, FOR FORDS—See Extractors, Bushing

REMOVERS, Carbon

(Chains or balls for use in cylinders to remove carbon; for Chemical Carbon Removers—See Compounds, Carbon Removing; for Oxygen Carbon Burners—See Machines, Engine Decarbonizing; for Steam Carbon Removers—See Moisteners, Air or Mixture.)

Michener, E. S., 27 Market St., Brownsville Pa.

Teepell, Edward A., 1523 N. 63d St., Philadelphia, Pa.

REMOVERS, ENAMEL—See Removers, Paint

REMOVERS, Paint, Enamel and Varnish

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Ad-El-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 303.)

Automotive Supply Mfg. Co., 2005 1/2 Main St., Dallas, Tex. "Cactus."

Behlen & Bro. H., 371 Pearl St., New York, N. Y.

Berry Bros., 211 Lieb St., Detroit, Mich.

Bilchaco—See Billings-Chapin Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."

Boyle Co., A. S., 1934-40 Dana Ave., (Evanston) Cincinnati, O. "Varnigo."

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Crown."

Bridgeport Wood Finishing Co., New Milford, Conn.

Cactus—See Automotive Supply Mfg. Co.

Callery & Co., W. W., 188 26th St., Pittsburgh, Pa.

Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."

Crown—See Bradley & Vrooman Co.

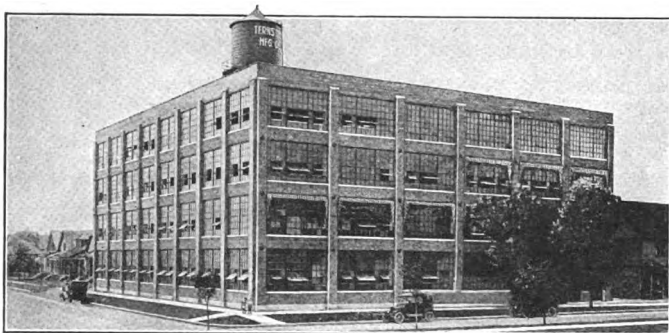
Day & Co., James B., 214 W. Ohio St., Chicago, Ill. "Kut-Kote."

Denegre Baked Enamel Remover Co., 1923-24 Ave. F, Birmingham, Ala.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers Abluent."

Eberson-Lindley Paint Co., 1830-32 Morgan St., St. Louis, Mo. "V. & P."

Everything is listed under the NOUN or principal word



Closed Body Hardware

**Ternstedt
Anti-Rattlers**



500



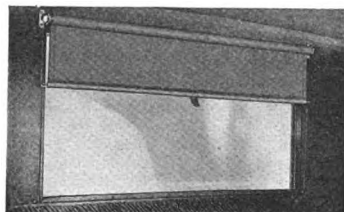
600



700



Fig. 1. Front



Ternstedt Curtain Roller

WE specialize in closed body hardware. We manufacture Window Regulators, Curtain Rollers, Rubber Door Bumpers, Anti-Rattlers, Hinges, Lever Door Locks, etc.

Let us know your requirements and we will gladly furnish you with an estimate

TERNSTEDT WINDOW REGULATORS



Fig. 1. Rear



Fig. 2. Front



Fig. 2. Rear



Fig. 2. Front

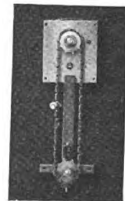


Fig. 3. Rear

Ternstedt Bumpers



1100



1120



1110



1115



1130



1131



Fig. 4. Front

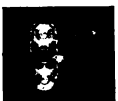


Fig. 4. Rear

TERNSTEDT MANUFACTURING Co.
Artillery and Muster Avenue, :: DETROIT, U. S. A.

Please mention The Automobile Trade Directory

REMOVERS, Paint, Enamel and Varnish (Continued)

Eclipse—See Gould & Cutler.
 Enterprise Paint Mfg. Co., Peoria & Van Buren Sts., Chicago, Ill. "Noxall."
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 Gillespie & Son, Chas. H., 19 Day St., Jersey City, N. J. "Monarch Bull Dog."
 Glidden Co., Cleveland, O.
 Gould & Cutler, 45 Sudbury St., Boston, Mass. "Eclipse."
 Idol-Yusso—See Schlegel Mfg. Co.
 Imp—See Rust-Off Mfg. Co.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Rapid."
 Jewel—See Wadsworth-Howland Co.
 Klean-Itt—See Lawrence & Co.
 Kut-Kote—See Day & Co.
 Lawrence & Co., W. W., Pittsburgh, Pa. "Klean-Itt."
 Lingerwett—See Wilson-Imperial Co.
 Lucas & Co., John, 323-30 Race St., Philadelphia, Pa. "Mirac."
 Mirac—See Lucas & Co.
 Monarch Bull Dog—See Gillespie & Son.
 Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.
 Noxall—See Enterprise Paint Mfg. Co.
 Oakite—See Oakley Chemical Co.
 Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."
 Parrott Varnish Co., 453 N. Washington Ave., Bridgeport, Conn.
 Phenold—See Chalmers Chemical Co.
 Quickwork—See Standard Varnish Works.
 Rapid—See Indianapolis Paint & Color Co.
 Rogers Abluent—See Detroit White Lead Works.
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Imp."
 Sailors & Lamb Co., 7321 Woodland Ave., Cleveland, O. "Superior."
 Schlegel Mfg. Co., Oscar, 124 E. 13th St., New York, N. Y. "Idol-Yusso."
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Supremo—See Sailors & Lamb Co.
 V. & P.—See Ebersson-Lindsay Paint Co.
 Varnigo—See Boyle Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Wilson-Imperial Co., 115 Chestnut St., Newark, N. J. "Wonderpaste," "Lingerwett."
 Wonderpaste—See Wilson-Imperial Co.

REMOVERS, PISTON RING—See Tools, Piston Ring

REMOVERS, TIRE—See Tools, Tire

REMOVERS, VARNISH—See Removers, Paint

REMOVING COMPOUNDS—See Compounds, Rust Preventing and Removing; also Compounds, Tar Removing; also Compounds, Carbon Removing; also Removers, Paint and Varnish

REMOVING TOOLS—See Tools, Valve Lifting and Spring Compressing; also Tools, Valve Cage Removing

REPAIR BRACKETS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR CLAMPS—See Clamps, Spring Repair

REPAIR CLAMPS, TRANSMISSION DRUM FOR FORDS—See Clamps or Vises, Transmission Drum Repair

REPAIR KNIVES—See Knives, Tire Repair

REPAIR LINKS—See Links, Tire Chain Repair

REPAIR PARTS—See Parts, Orphan Car Repair; also Parts, Speedometer Repair; also Parts, Storage Battery Repair; also Parts, Magneto, Coil and Distributor

REPAIR STANDS—See Stands, Motor Repair; also Stands, Rear Axle Repair; also Stands, Radiator Repair

REPAIR SUPPORTS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR TRUCKS—See Trucks, Repair

REPAIRERS, SPRING—See Clamps, Spring Repair

REPAIRERS, IGNITION and STARTER—See Stations, Electric Service

REPAIRING OF SCORED CYLINDERS—See Cylinders Scored, Repairing of

REPAIRING OF WHEELS—See Wheels, Repairing of

REPORTS, Used Car Market

Chicago Auto Trade Association, 2136 S. Michigan Ave., Chicago, Ill.
 (See page 35.)

RESEATERS, VALVE—See Tools, Valve Reseating

RESERVE COCKS—See Valves, Two Way Tank

RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply

RESERVE TANKS—See Tanks, Emergency or Reserve

RESERVE VALVES—See Valves, Two Way Tank

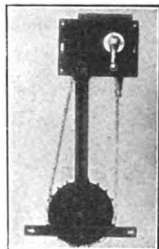
RESERVE VALVES FOR FORDS—See Cocks, Fuel Supply and Reserve

RESTS, BACK—See Rests, Cushion; also Rests, Motorcycle Back

RESTS, Bow

(See also Holders, Top; also Separators, Bow)
 Anchor—See North & Judd Mfg. Co.

Everything is listed under the NOUN or principal word



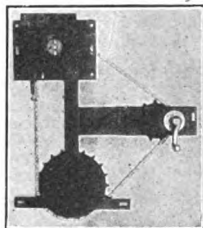
Std. Reg.



Rear Quarter Reg.

PERFECT WINDOW REGULATORS

We specialize in Window Regulators for closed bodies. All exclusive American and European automobile manufacturers and body builders have adopted "Perfect Regulators" as standard equipment.



Offset Reg.



Installation

METAL CHANNELS

No. 1

No. 2

No. 3

Fence Rail

PERFECT WINDOW REGULATOR COMPANY

20 Exchange Place, New York City

Pacific Coast Representative: Scovel Iron Store Company, San Francisco, Cal.

Foreign Branch: H. M. Hobson, Ltd., London, England

Foreign Representatives: Messrs. Hobson (Belgium), Ltd., Brussels, Belgium. Technisch Bureau Bylevald, Amsterdam, Holland.

RADIATORS FOR TRUCKS

The Bush Mfg Co.

HARTFORD, CONN.

Please mention The Automobile Trade Directory

RESTS, Bow (Continued)

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
Bantlin Co., Julius J., Cincinnati, O. "Hoover."
Brewer-Tichenor Corp., Cortland, N. Y. (See page 573.)
Campbell—See Perkins-Campbell Co.
Desoco—See Detroit Socket Co.
Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
Hoover—See Bantlin Co.
Jonah & George, Little's Ct., Merrimac, Mass.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

RESTS, Cushion Back

(Special removable cushions for back rests for drivers seats)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
Accurate Cover Co., 373 Canal St., New York, N. Y.
A. P. Co.—See Atlantic-Pacific Mfg. Co.
Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 303.)
Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
Automobile Apparel Co., Bush Ave., Port Chester, N. Y.
B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Ezback." (See page 313.)
Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
Bantlin Co., Julius J., Cincinnati, O.
Bueh & Scheu, 500-10 Webster St., Cincinnati, O. (See page 983.)
Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.
Campbell—See Perkins-Campbell Co.
Casco—See Cincinnati Auto Specialty Co.
Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.
Columbus Upholstery Supply Co., 113 N. Third St., Columbus, O.
Comfo Lux Cushion Co., Claus Bldg., Ottawa, Ill.
Comfy—See Niagara Fabric Mfg. Co.
Dunham Co., Thos., Aurora, Ill. (See page 163.)
E-Z—See Tower & Co.
Easybak—See Holden Mfg. Co.
Economy Seat Co., 3123-36 S. Canal St., Chicago, Ill. "Esco E-Z."
Ezback—See B. E. Mfg. Co.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Esco E-Z—See Economy Seat Co.
Fitwell—See Bailey-Fitwell Co.
Fitwell—See Niagara Fabric Mfg. Co.
Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Gordon Co., J. P., 555 N. Fourth St., Columbus, Ohio.
Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Komfy."
Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Easybak."
Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.
Komfy—See Hodes-Zink Mfg. Co.
Lockwood Mfg. Co., Kansas City, Mo.
Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitwell." "Comfy."
Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)
Powers Mfg. Co., Waterloo, Ia. (See page 581.)
Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
Sterling Top & Equipment Co., 518-22 W. 57th Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.
Tower & Co., Cohasset, Mass. "E-Z"

RESTS, Cushion Back, for Fords

(Special cushions to apply to top of seat back to increase height of back cushion)

A. P. Co.—See Atlantic-Pacific Mfg. Co.
Atlantic-Pacific Mfg. Co., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 303.)
Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (See page 983.)
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Gordon Co., J. P., 555 N. Fourth St., Columbus, Ohio.
Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
Wood Co., W. C., Sixth Ave. S. E. & University Ave., Minneapolis, Minn.

RESTS, FOOT—See Rests or Rails, Foot**RESTS, Heel**

(For rendering operation of clutch or accelerator pedals easier and less tiresome)

Auto Pedal Co., 318-20 W. 52d St., New York, N. Y.
Bee Dee Distributing Service, 612 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.) (See page 1003.)
Bloom Auto Specialty Co., 18 Charlotte St., Tiffin, O. "Resto."
Comfort—See General Appliance Co.
Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
De Luxe Auto Mfg. Co.—See Bee Dee Distributing Service.
E-Z—See Henderson-Cloud Co.
E-Z Mfg. Co., 4851 Spring Grove Ave., Cincinnati, O.
General Appliance Co., 100 Boylston St., Boston, Mass. "Comfort."
Henderson-Cloud Co., 1032 S. Grand Ave., Los Angeles, Cal. "E-Z."

Everything is listed under the NOUN or principal word

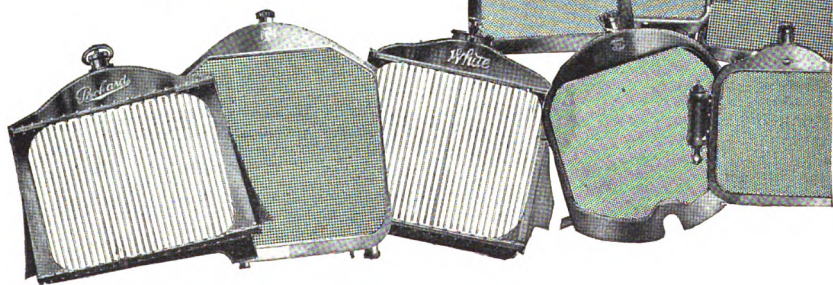
There is a Fedders Radiator for Every Purpose

Backed by an experience that dates from the industry's beginning, Fedders offers a choice of various radiator types to best meet the special cooling demands of each vehicle.

Big seven-ton trucks, light delivery cars, the highest priced limousines and the special-cooled runabout, all are proving in daily service that Fedders Radiators best solve their motor cooling problems.

"Ask Fedders"

Fedders Manufacturing Co., Inc.
Buffalo, N. Y.



FEDDERS

AUTOMOTIVE RADIATORS

Please mention The Automobile Trade Directory

RESTS, Heel (Continued)

Hicks Mfg. Corp., 7508-12 Saginaw Ave., Chicago, Ill.
 Hon—See Honeyman Co.
 Honeyman Co., W. A., 1371 24th Ave., San Francisco, Cal. "Hon."
 Humboldt—See Republic Auto Parts Co.
 Lucas & Son, J. L., 1 Fox St., Bridgeport, Conn.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
 Resto—See Bloom Auto Specialty Co.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill. (See page 643.)
 Star Aluminum Foundry, 3619-21 18th St., San Francisco, Cal.
 Uniq—See Spiro Mfg. Co.
 Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 895.)
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

RESTS, Heel, for Fords

Lucas & Son, J. L., 1 Fox St., Bridgeport, Conn.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.

RESTS, Motorcycle Back

F-N—See Fentress-Newton Mfg. Co.
 Fentress-Newton Mfg. Co., 1011-19 W. Lafayette Blvd., Detroit, Mich. "F-N."
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Peerblow Mfg. Co., Leetsdale, Pa. "Rest-asy."
 Restezy—See Peerblow Mfg. Co.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J. "Weed."
 Weed—See Standard Metal Mfg. Co.

RESTS or RAILS, Foot

(See also *Hosehooks*; For heated foot rests—See *Heaters, Automobile*)

Aetna Brass & Bronze Co., 1681-85 E. 55th St., Cleveland, O.
 Allen Fire Department Supply Co., Providence, R. I.
 Amesbury Brass & Foundry Co., Amesbury, Mass.
 Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Cowles & Co., C., New Haven, Conn.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 171.)
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Highton & Sons Co., Wm., Nashua, N. H.
 Hunt & Co., E. J., Equity Bldg., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Jonah & George, Little's Ct., Merrimac, Mass.
 Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
 Meyer Scale & Hardware Co., 333 Adams St., Newark, N. J.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, Ohio. (See page 399.)
 Pfau Mfg. Co., Cincinnati, O.
 Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.
 Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rostand Mfg. Co., Milford, Conn.
 Sargent Mfg. Co., New & Summit Sts., Newark, N. J.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.
 Thomson Mfg. Co.—See Hunt & Co.
 Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 895.)
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

RESTS or RAILS, Foot, for Fords

(For heated rails—See *Heaters, Automobile*)

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

RETAINERS, Ball

Bearings Co. of America, Lancaster, Pa. "Star." (See page 133.)
 Bossert Corp., Utica, N. Y. (See page 887.)
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 987.)
 National Bearings Co., 637 Lancaster Ave., Lancaster, Pa.
 S-W-S Co., Minneapolis, Minn. (See page 457.)
 Star—See Bearings Co. of America.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

Everything is listed under the NOUN or principal word

Motorcraft Engineering Co.

2270 Franklin St., Detroit, Michigan

Exclusive Distributors of

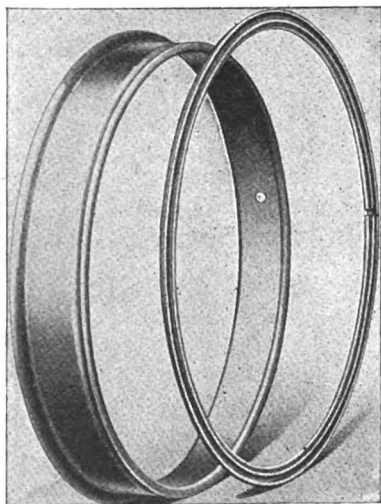
STANDARDIZED RIMS AND RIM PARTS

as used on present model

BUICK OLDS OAKLAND CHEVROLET

All Sizes Carried in Stock

Besides Goodyear Detachable Rims



Cleveland Welding Products include Standardized Demountable Rims; Clincher Rims; Tire Bases for Solid Tires; Flanges and Motor Truck Wheel Bands; Gear Ring Blanks; Special Electrically Welded Rings; Special and Irregular Shapes of Tubing. We also manufacture and market Goodyear Detachable Rims for Wire, Disc and Wood Wheels; and Demountable Rims.

Every process, from the making of the steel to the finishing of these products, is under the direct supervision of our own skilled men.



The Cleveland Welding & Mfg. Co.
of The Hydraulic Steel Company
Cleveland, Ohio

Branch Sales Offices:

New York
Singer Building
Detroit
Book Building

Chicago
Fisher Building
San Francisco
Hearst Building

DETROIT PISTON RING CO.

RICHMOND AND CUSTER

DETROIT, MICHIGAN



TRADE MARK

Please mention The Automobile Trade Directory

RETAINERS, BELT, FOR FORDS—See Guides, Fan Belt

RETAINERS, FAN BELT, FOR FORDS—See Guides, Fan Belt

RETAINERS, GREASE, FOR FORDS—See Retainers, Rear Axle Grease

RETAINERS, Rear Axle Grease, for Fords

(For preventing leakage of grease from rear axle on to brakes, wheels or tires)

Apex Mfg. Co., 1903-05 Locust St., St. Louis, Mo. "Kant-Leek."

C. & M.—See Sells & Co., O. P.

Contrell-Miller Machine Works—See Sells & Co.

H. & D. Co., Crawfordsville, Ind. (See page 1031.)

Kant-Leek—See Apex Mfg. Co.

Korex Mfg. Co., 422 Larkin St., San Francisco, Cal.

Perfection Machine Co., Jeromeville, O.

Sells & Co., O. P., 1834 Broadway, New York, N. Y. (Sole Distributors for Contrell-Miller Machine Works, San Francisco, Cal. "C. & M.")

Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

Star-K—See Stark-Inland Machine Works.

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

RETAINING RINGS—See Fillers, Tire Bead

RETARDERS, Automatic Spark, for Fords

(Device to automatically retard spark when starting crank to engaged or to prevent engagement of crank until spark has been retarded)

Kant Kiek Spark Set Co., Elkhorn, Wis.

Safety Spark Set Co., Elkhorn, Wis.

RETHREADING TOOLS—See Tools, Tire Valve Rethreading

REVERSE BAND ADJUSTERS FOR FORDS—See Adjusters, Brake and Reverse Band

REVERSE CURRENT CUTOUTS—See Cutouts, Reverse Current

REVERSE GEARS, MOTOR BOAT—See Gears, Motor Boat Reverse

REVERSING PROPELLER WHEELS, MOTOR BOAT—See Wheels, Motor Boat Reversing

RHEOSTATS, Battery Charging

Allen-Bradley Co., 284 Greenfield Ave., Milwaukee, Wis.

Cutler Hammer Mfg. Co., 390 St. Paul Ave., Milwaukee, Wis.

Electric Products Co., Cleveland, O. (See page 375.)

General Electric Co., Schenectady, N. Y. (See page 779.)

H-B—See Hobart Bros. Co.

Hobart Bros. Co., Troy, O. "H-B."

I-C—See Industrial Controller Co.

Industrial Controller Co., 686 Greenbush St., Milwaukee, Wis. "I-C."

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

National Electric Controller Co., 184-86 Whiting St., Chicago, Ill.

Schaefer Bros., 1059 W. 11th St., Chicago, Ill.

Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.)

(See page 177.)

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

RIBS, AIRPLANE—See Parts, Airplane Wood

RIM ANVILS—See Anvils, Rim

RIM APPLYING PRESSES—See Presses, Truck Rim Applying

RIM BOLTS—See Bolts, Special Demountable Rim

RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

RIM COVERS—See Covers, Cork Pulley Rim

RIM ENAMELS—See Paints, Rim; also Paints, Aluminum and Bronze

RIM EXPANDERS—See Tools, Demountable Rim Contracting

RIM PAINTS—See Paints, Rim

RIM SHIMS—See Plates, Demountable Rim Wedge

RIM REMOVING TOOLS—See Tools, Demountable Rim Contracting

RIM SPREADERS—See Tools, Demountable Rim Contracting

RIM TOOLS—See Tools, Demountable Rim Contracting

RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

RIMS, Airplane Wheel

Cleveland Welding & Mfg. Co., of the Hydraulic Steel Co., Berea Rd. & W. 117th St., Cleveland, O. (See page 781.)

Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & W. R. R., Utica, N. Y.

RIMS, Demountable

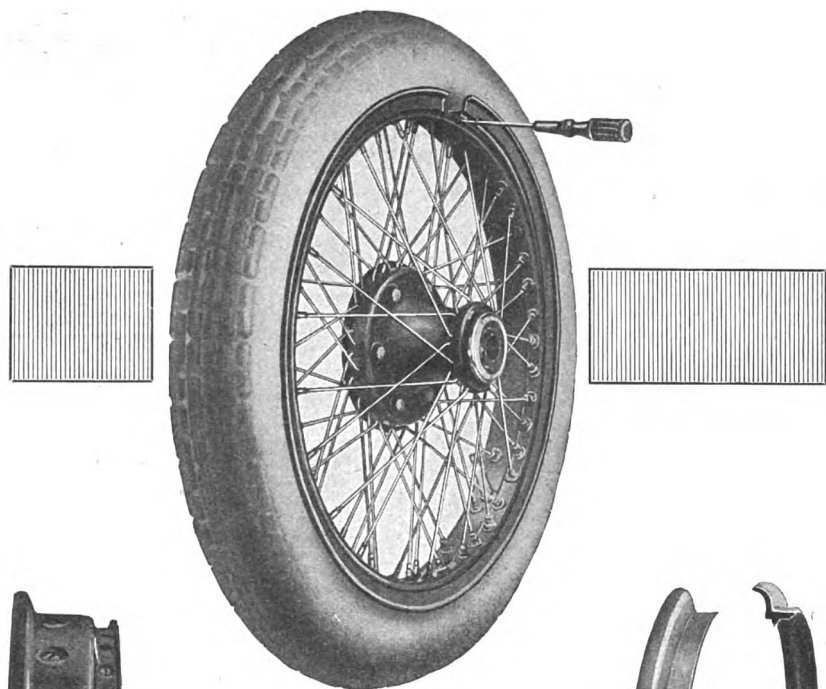
Aach and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for "R-M" Rims; also "Spec Dee" Rims.) (See page 243.)

Auto Collapsible Rim Mfg. Co., 207 S. Madison Ave., Peoria, Ill.

Baker—See Stone Mfg. Co.

Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (Dealers.) (See pages 794 and 795.)

Everything is listed under the NOUN or principal word



Johnson Rims

For Wire, Wood and Disk Wheels

Tire Changing Is Easy — with
Johnson Rims. No Wrench. No
Hammer. No Spreaders. No
Effort.

Just use a screwdriver—pry one end of
ring loose, remove ring, and tire comes
off as easy as picking it up from the floor.
Johnson Rims are rustproof—

Replacing tire is equally easy.

Johnson Rims, laced into wire wheels,
can be secured from all prominent wire
wheel manufacturers.

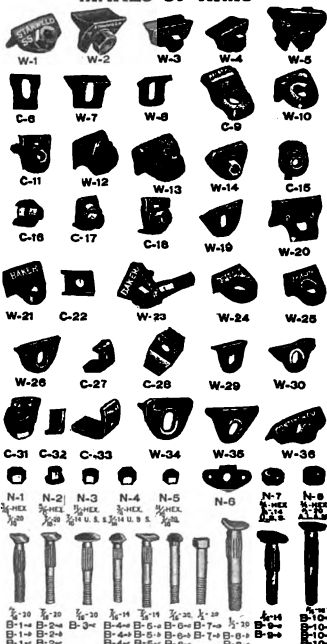
**JOHNSON RIM
AND PARTS CO., Inc.
BUFFALO, N. Y.**

Please mention The Automobile Trade Directory

--RIMS AND

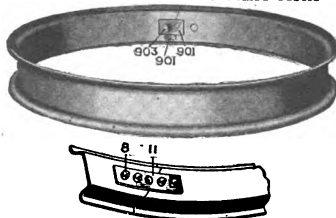
ALL TYPES OF RIMS AND RIM PARTS CARRIED IN LARGE AND COMPLETE STOCK AT WAREHOUSES

WEDGES AND PARTS FOR ALL MAKES OF RIMS



Note—Above parts are packed in cardboard cartons containing 12 each. Order by dozen or gross. Also packed in 1 or boxes containing 250 each bulk.

STANDARDIZED BAKER RIM



BAKER
Standardized Baker Substitutes for Baker
and Detroit Rims Shown

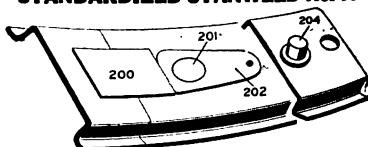
STANWELD RIMS

No. 22 S. S.

No. 22 Cl.



This rim also substitutes for Continental No. 3 rim.
STANDARDIZED STANWELD No. 76

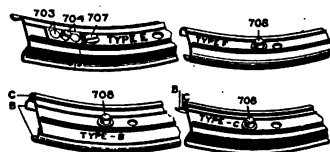


Interchanges with Standardized Baker Rims

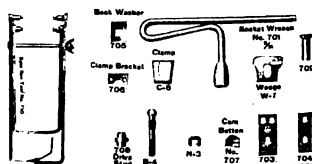
PERLMAN JAXON RIMS



FIRESTONE RIMS



ACCESSORIES



SEND FOR COMPLETE RIM AND

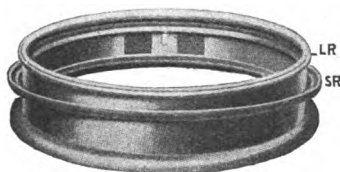
WESTERN DISTRIBUTOR
CHICAGO WHEEL AND RIM CO.
CHICAGO 2010 South Wabash Avenue ILLINOIS

MID-WESTERN
MOTOR RIM MAN
CLEVELAND

Please mention The Automobile Trade Directory

**STOCK AT DISTRIBUTING POINTS GIVEN BELOW
MAKE IMMEDIATE SERVICE ASSURED**

**GIANT PNEUMATIC
DEMOUNTABLE TRUCK RIMS
KELSEY—FIRESTONE—GOODYEAR
ALL SIZES**

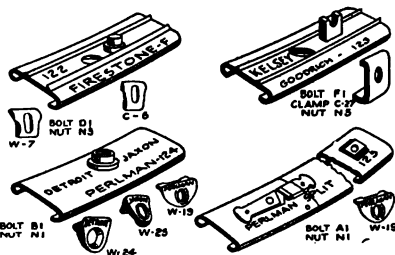
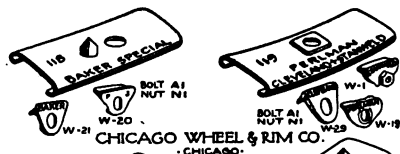
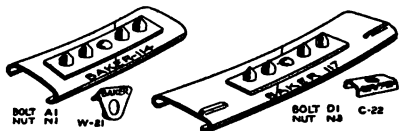
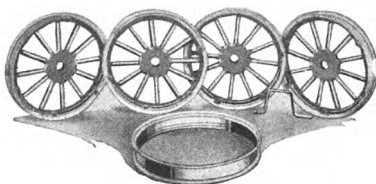


30x3; CLINCHER DEMOUNTABLE RIMS

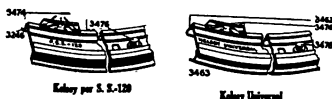
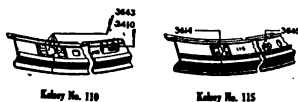
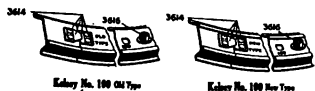
FORD DEMOUNTABLE SETS

**Painted Black or Natural Wood
Varnished**

**Set Consists of Four Wheels
Five Rims, Wrench and Hub Bolts**



KELSEY RIMS (All Types)



WHEEL CATALOG AND PRICE LIST

**DISTRIBUTOR
UFACTURERS CO.
OHIO**

EASTERN DISTRIBUTOR
JACOB MATTERN AND SONS
NEW YORK CITY 53rd & Broadway NEW YORK

Please mention The Automobile Trade Directory

RIMS, Demountable (Continued)

Cleveland Welding & Mfg. Co. of the Hydraulic Steel Co., Berea Rd. & W. 117th St., Cleveland, O. "Goodyear." (See page 791.)

Colton Demountable Rim Corp., 23 Water St., New York, N. Y. (See page 677.)

Copithorn Mfg. Co., 80 Boylston St., Boston, Mass.

Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.

Daly Co., Marsh Strong Bldg., Los Angeles, Cal.

Darco—See Divided Auto Rim Co.

Divided Auto Rim Co., 350 Broadway, New York, N. Y. "Darco."

Dressel Collapsible Rim Mfg. Co., 5156-58 Delmar Ave., St. Louis, Mo.

Firestone Steel Products Co., Miller St. & Switzer Ave., Akron, Ohio.

Goodyear—See Cleveland Welding & Mfg. Co.

Howard Demountable Rim Co., 1850 E. State St., Trenton, N. J.

Jaxon Steel Products Co., Jackson, Mich.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Oliver Rim Co., Atlanta, Ga.)

Johnson Rim & Parts Co., Buffalo, N. Y. (See page 793.)

Kelsey Wheel Co., Detroit, Mich. (See page 1061.)

Lightning Rim Corp., 303 W. 57th St., New York, N. Y.

Lightning Change Rim Co., Masonic Temple, Chicago, Ill.

Michelin Tire Co., Milltown, N. J.

Michon, J. H., 1154 Lincoln Ave., Toledo, O.

Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (Dealers.) (See page 791.)

Mott Wheel Works, Jackson, Mich. "R-M."

Oliver Rim Co.—See Jonas, C. N. & F. W.

Parker—See Union Steel Products Co.

Prasto Inter-Rim Co., 940 Commonwealth Ave., Boston, Mass.

R-M—See Mott Wheel Works.

Raymond Rim & Wheel Co., Sun Bldg., Jackson, Mich.

S & I—See Stone Mfg. Co.

Spee-Dee—See Spencer Metal Products Co.

Spencer Metal Products Co., Spencer, O. "Spee-Dee." (See page 508.)

Standard Rim Corp., 1482 Broadway, New York, N. Y. (See page 677.)

Standard Parts Co., Cleveland, O. "Stanweld." (See page 283.)

Stanweld—See Standard Parts Co.

Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. "Baker," "S & I." (See page 797.)

Union Steel Products Co., Berrien & Pine Sts., Albion, Mich. "Parker."

RIMS, Demountable, for Fords

Baker—See Stone Mfg. Co.

Daly Co., Marsh Strong Bldg., Los Angeles, Cal.

Dressel Collapsible Rim Mfg. Co., 5156-58 Delmar Ave., St. Louis, Mo.

Howard Demountable Rim Co., 1850 E. State St., Trenton, N. J.

Johnson Rim & Parts Co., Buffalo, N. Y. (See page 793.)

Lane Bros. Mfg. Co., Shelburne, Ind. "Minit-Chanl."

Minit-Chanl—See Lane Bros. Mfg. Co.

Raymond Rim & Wheel Co., Sun Bldg., Jackson, Mich.

S. I.—See Stone Mfg. Co.

Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. "Baker," "S & I." (See page 797.)

RIMS, DETACHABLE—See Rims, Quick Detachable**RIMS, Emergency, for Fords**

Twin-Rim Co., Everett, Mass.

RIMS, Motorcycle Wheel

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 243.)

Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.

Mott Wheel Works, Jackson, Mich.

Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & W. R. R., Utica, N. Y.

RIMS, Quick Detachable

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 243.)

Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (Dealers.) (See pages 794 and 795.)

Federal Detachable Rim & Wheel Mfg. Corp., Syracuse, N. Y.

Johnson Rim & Parts Co., Buffalo, N. Y. (See page 793.)

Kelsey Wheel Co., Detroit, Mich. (See page 1061.)

Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (Dealers.) (See page 791.)

Mott Wheel Works, Jackson, Mich.

Quick & Easy—See Wheel & Rim Works Corp.

Stanweld—See Standard Parts Co.

Standard Parts Co., Cleveland, O. "Stanweld." (See page 283.)

Wheel & Rim Works Corp., 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."

RIMS, REMOVABLE—See Rims, Demountable**RIMS, Rubber or Composition Steering Wheel**

(For complete steering wheels—See Wheels, Steering)

General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

RIMS, Standard

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Mott Rims.) (See page 243.)

Everything is listed under the NOUN or principal word

THE STONE MFG. CO.

1502 Michigan Ave. CHICAGO, ILLINOIS

The "S. I." Rim

*makes your
rim problems
simple—*



BECAUSE

It is made to fit from 70% to 80% of all cars now in use without a solitary change.

If you sell the S. I. RIM you can give the most service on the least investment.

One rim of each size will be an 80% complete stock.



The Stone Interchangeable Rim

is made to replace and interchange with the following rims:

Kelsey No. 20 and 30
Stanweld No. 21, 22
and 76

Baker Standardized

Dodge T41

Perlman-Jackson

Baker

Detroit

Made in the following sizes:

30x3½	CL.	.....	\$3.30
32x3½	SS.	.....	4.65
32x4	SS.	.....	5.00
33x4	SS.	.....	5.25
34x4	SS.	.....	5.60
34x4½	SS.	.....	6.60

Write for Complete Information

Please mention The Automobile Trade Directory

RIMS, Standard (Continued)

Kelsey Wheel Co., Detroit, Mich.
(See page 1061.)

Motorcraft Engineering Co., 2270 Frank-
lin St., Detroit, Mich. (Dealers.)
(See page 791.)

Mott Wheel Works, Jackson, Mich.
S I—See Stone Mfg. Co.

Standard Parts Co., Cleveland, O. "Stan-
weld." (See page 283.)

Stanweld—See Standard Parts Co.

Stone Mfg. Co., 1502 Michigan Ave., Chi-
cago, Ill. "S. I." (See page 797.)

Williams Steel Wheel & Rim Co., Pleasant
St. & N. Y., O. & S. W. R. R., Utica, N. Y.

RIMS, STEERING WHEEL—See Rims, Rub-
ber Steering Wheel; also Rims, Wood
Steering Wheel

RIMS, Supplementary

(Special Rim to permit the use of old tire casings
over the regular casing)

Uzold Tire Corp., Park Bldg., Cleveland, O.

RIMS, TRACTION—See Bands, Non-Skid
Truck

RIMS, Wood Steering Wheel

(For complete steering wheels—See Wheels,
Steering)

Allerdig Products Co., 209 N. Main St., Mans-
field, O.

American Wood Rim Co., Onaway, Mich.

Haberkorn & Co., C. H., 1331 W. Elizabeth
St., Detroit, Mich.

K. & S. Mfg. Co., 2544 S. Western Ave., Chi-
cago, Ill.

La Pierre & Co., H. M. (Dudie), 1314-16 W.
21st St., Chicago, Ill. (See page 895.)

Rastetter & Sons, Louis, Nelson & Wall Sts.,
Fort Wayne, Ind.

Wayne Steering Wheel & Bow Co., Wayne,
Mich.

RIMS or Felloes, Wood

Campbell & Dann Mfg. Co., Tullahoma, Tenn.
Columbus Bending Co., Columbus, O.

Crane & MacMahon, St. Marys, O. "Nut,"
"Star."

Eberly & Orris Mfg. Co., Mechanicsburg, Pa.

Empire—See Skeens Empire Bending Works.

Hartwell Handle Co., 146th & Lincoln Sts.,
Harvey, Ill.

Jones & Co., Phineas, 305 Market St., Newark,
N. J.

Lebseiter & Son Co., Philip, 241 N. Queen St.,
Lancaster, Pa.

Nut—See Crane & MacMahon.

Skeens Empire Bending Works, 114 S. Chris-
tian St., Lancaster, Pa. "Empire."

Skinner Bending Co., J. M., Broadway & Wa-
bash R. R., Toledo, O.

Star—See Crane & MacMahon.

RING GAGES—See Gages, Plug and Ring

RING GEARS—See Gears, Steel Ring

RING GRINDERS—See Grinders, Piston
Ring

RING GROOVE CLEANING TOOLS—See
Tools, Piston Ring Groove Cleaning.

RING TOOLS—See Tools, Piston Ring

RINGS, DUST—See Washers, Felt

RINGS, Piston

(See also Machine Work; also Cylinders,
Regrinding of)

A. C. Non-Leakable Piston Ring Co., Comp-
ton, Ill.

Acme—See Kaufman Engineering Co.

Albertson & Co.—See Jonas, C. N. & F. W.

Alloyanum—See Miller Engineering & Foun-
dry Works.

Amelung Mfg. Co., A. F., First St., Sanborn,
Ia. "Can't Leak."

American Distributing Co., Kresge Bldg., De-
troit, Mich. (Sole Distributors for Ameri-
can Metal Parts Corp., Boston, Mass. "Pre-
cision.")

American Hammered Piston Ring Co.,
Baltimore, Md. (See page 801.)

American Metal Parts Corp.—See American
Distributing Co.

American, Piston Co., Bowling Green, O.
"Tapco."

Arizona Machinery Mfg. Co., 222-26 N. Sev-
enth St., Phoenix, Ariz.

Asch and Co., Inc., 16-24 W. 61st, New
York, N. Y. (Eastern and Southern Dis-
tributors for "Sioux" Rings.)
(See page 243.)

Auto Engine Works, University Ave. & Griggs
St., St. Paul, Minn.

Bailey-Drake Co., 1129 S. Michigan Ave., Chi-
cago, Ill. (Sole Distributors for Trione
Mfg. Co., St. Louis, Mo.)

Blettner, Geo. H., 1401-06 Jackson Blvd., Chi-
cago, Ill.

Bridgeport Piston Ring Co., Connecticut Ave.
& Third St., Bridgeport, Conn.

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 889 Main St.,
Buffalo, N. Y.

Burd High Compression Ring Co., Rock-
ford, Ill.

Butler Mfg. Co., 2234 W. Washington St., In-
dianapolis, Ind. "Bu-Nite."

Can't Leak—See Amelung Mfg. Co.

Carbon-O—See Steam Tractor Auto Mfg. Co.

Chance Co., Centraia, Mo. "Gas-Tite."

Chopa Piston Ring Co., 404-06 E. Jefferson
Ave., Detroit, Mich.

Cloud Accessories Corp., 1408 S. Wabash Ave.,
Chicago, Ill.

Club Auto Parts & Machine Co., 204-06 Ches-
ter St., Buffalo, N. Y.

Commerce Steel Products Co., 721 Otis Bldg.,
Chicago, Ill.

Continental Piston Ring Co., 648-50 Marshall
Ave., Memphis, Tenn. "Hi-Comp," "Hi-
Speed."

D. & M. Auto Parts Co., 1003 N. E. St., Rich-
mond, Ind. "Domor."

Davidson Multiple Piston Ring Co., 227 W. 64th
St., New York, N. Y.

Detroit Piston Ring Co., Richmond &
Custer, Detroit, Mich. (See page 791.)

Domor—See D. & M. Auto Parts Co.

Double Seal Ring Co., 1517 S. Michigan
Ave., Chicago, Ill. (See page 1029.)

De Luxe—See Ingram Motor Co.

Eclipse—See Hope Machine Co.

Eco Co., Wormwood St., Boston, Mass.
"Namethod." (See page 627.)

Everything is listed under the NOUN or principal word

Gill

One-piece Piston Rings



*in more than 3,000 sizes
and over-sizes*

There is a Gill One-piece Piston Ring in every size and over-size to fit every make and model of motor. And no matter *when* or *where* Gill Piston Rings are wanted they can be secured in 24 hours, for there are more than 2,000 stocks of Gill One-piece Piston Rings in the country.

THE GILL MANUFACTURING COMPANY,
8300 South Chicago Avenue, Chicago, Illinois

Canadian Manufacturer:
BROWN ENGINEERING CORPORATION, Limited
Toronto, Ontario

Sole Export Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

*Identify the Gill
One-piece Piston
Ring by the joint,
but do not measure
its merit by
the joint alone.*



39 Branch Offices prepared to give practically 24-hour service to the entire trade. Whenever possible, however, dealers should order through their jobbers.





Gill

One-piece Piston Rings

are carried in stocks ranging from 500 to 10,000 rings each, by nearly all jobbers. If your jobber happens to be out of the size you want, tell him to get in touch with the nearest of these Branch Offices. The Gill Piston Ring Company—

AT

Atlanta, Ga.	25-27 Nassau Street
Albany, N. Y.	
Albuquerque, N. M.	
Baltimore, Md.	623 West North Ave.
Birmingham, Ala.	421 South 20th St.
Boston, Mass.	93 Massachusetts Ave.
Brooklyn, N. Y.	1111 Bedford Avenue
Buffalo, N. Y.	1032 Main Street
Columbus, Ohio	136 East Gay Street
Chicago, Ill.	2131 South Michigan Ave.
Cincinnati, Ohio	907 Race St.
Cleveland, Ohio	1907 Euclid Ave.
Charlotte, N. C.	301½ W. Trade Street
Dallas, Texas	2029 Main Street
Denver, Colo.	1571 Broadway
Des Moines, Iowa	1301 Locust Street
Detroit, Mich.	4450 Woodward Ave.
Hartford, Conn.	349 Trumbull Ave.
Helena, Mont.	7 Placer Avenue
Indianapolis, Ind.	319 North Capitol Ave.
Kansas City, Mo.	205 East 18th Street
Los Angeles, Cal.	1522 South Grand Ave.
Minneapolis, Minn.	1104 Hennepin Ave.
Milwaukee, Wis.	205 Second Street
Memphis, Tenn.	247 Poplar Street
New Orleans, La.	857 Carondelet Street
New York, N. Y.	1864 Broadway
Omaha, Nebr.	1923 Farnham Street
Pittsburgh, Pa.	5911 Baum Boulevard
Philadelphia, Pa.	824 North Broad Street
Portland, Ore.	409 Burnside St., West
Richmond, Va.	214 North Adams Street
Salt Lake City, Utah	25 East Fourth St., South
San Francisco, Cal.	803 Van Ness Avenue
St. Louis, Mo.	3126 Locust St.
Seattle, Wash.	723 Pike St., East
Syracuse, N. Y.	402 Grape St.
Tulsa, Okla.	11 West 6th Street

THE GILL MANUFACTURING COMPANY,
8300 South Chicago Avenue, Chicago, Illinois

Canadian Manufacturer:
BROWN ENGINEERING CORPORATION, Ltd.
Toronto, Ontario

Sole Export Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

American Hammered Piston Rings

INDIVIDUALLY CAST AND TESTED—From special mixture of close grained gray iron, accurately tested, assuring uniform metal in every ring.

ONE PIECE—Easily installed—and not subject to the high breakage of multiple piece rings.

CONCENTRIC—An equal wall thickness at all points of the circumference allows the ring to fill the piston groove and leave no pocket behind the ring for oil accumulation and carbon deposits.

LEAKLESS—Accurately machined to fit the piston groove and cylinder—American Hammered Piston Rings are leakless. The tension, hammered into the rings uniformly, keeps them leakless. Heat from the motor does not affect American Hammered Piston Rings.

OVERSIZE—No extra charge for oversize rings. In ordering always give the diameter and width of rings wanted.

SEALED CONTAINER—Every ring is sealed in a moisture proof envelope, 12 to a box. The box is also sealed, giving a double assurance that every ring will be received in good condition.

★ **SPECIAL FOR FORDS**—American Hammered Piston Rings, made to fit the deep grooves in a Ford piston, are held to the same rigid specifications as those used as factory equipment for Pierce-Arrow, Mercer, Stutz, and other of the more expensive cars. In ordering these special rings, please specify "for Fords."

FOR ALL MOTORS—American Hammered Piston Rings for all makes and sizes of motorcycle, automobile, truck, tractor, marine and stationary engines, supplied on your order. Rings for replacement are subject to the same rigid inspection as those furnished to the highest class of motor manufacturers as factory equipment.

American Hammered
Piston Ring Company
Baltimore, Maryland

Look
for the
BALL POINT
HAMMER
MARKS
inside the
ring

List Price

DIAMETER	Width		
	1 1/8"	1 1/4"	1 1/2"
Also 5, 10, 20, 30 and 60 thousandths oversize in diameter	Also widths of 1 1/8", 1 1/4", 1 1/2", 1 3/4" and 1 7/8" when specified.		
2 1/4" 2 1/2" 2 3/4" 3" 3 1/4" 3 1/2" 3 3/4" 4" 4 1/4" 4 1/2" 4 3/4" 5" 5 1/4" 5 1/2" 5 3/4" 5 7/8"	\$1.00		
★ 3 1/2" 3 3/4"	1/4" (Special wall thickness .136"—150") FORD		
4" 4 1/4" 4 1/2" 4 3/4" 5" 5 1/4" 5 1/2" 5 3/4" 5 7/8"	\$1.25		
5" 5 1/4" 5 1/2" 5 3/4" 5 7/8"	\$1.50		
6" 6 1/4" 6 1/2" 6 3/4" 6 7/8"	\$2.25		
7" 7 1/4" 7 1/2" 7 3/4" 8"	\$2.75		
No extra charge for oversize rings.			
★ For Fords			
\$9.00			
Per Set of 12			

Please mention The Automobile Trade Directory

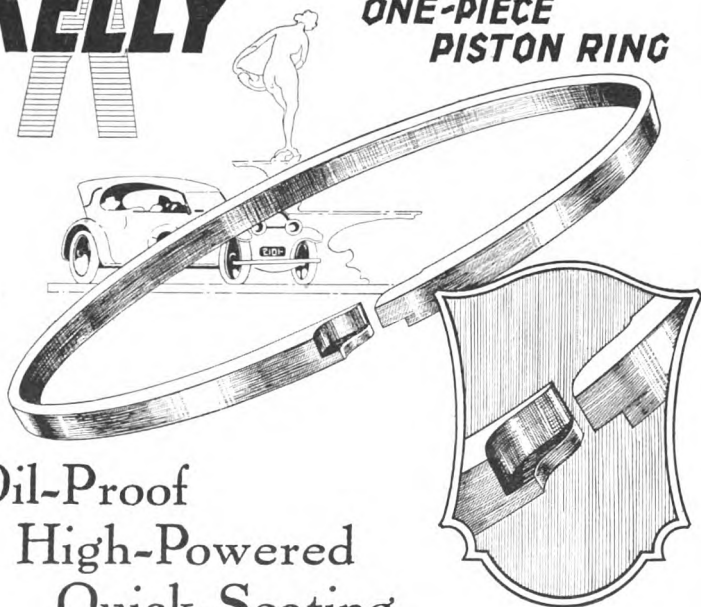
RINGS, Piston (Continued)

- Etemco—See Foster, Merriam & Co.
 End-Oxy Appliance Co., Trenton, N. J. "Leak-tite."
 Endurance Piston Ring Co.—See Jessop & Thompson.
 Ever-Tyte Piston Ring Division (Walter A. Zelnick Supply Co.), 1000 Kingsland Ave. (Wellston Dist.), St. Louis, Mo. (See page 813.)
 F. W. S.—See Stewart Mfg. Co.
 Fargo Motor Co., 1192-64 W. 22d St., Chicago, Ill. (See page 611.)
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
 Foster, Merriam & Co., Meriden, Conn. "Etemco," "Ful-A-Pep." (See page 809.)
 Frank Motor Products Corp., Richmond Hill, N. Y. (See page 625.)
 Franklin Auto Parts Co., Franklin, N. H. (Sole Distributor for Franklin Machine Co., Franklin, N. H.)
 Franklin Machine Co.—See Franklin Auto Parts Co.
 Ful-A-Pep—See Foster, Merriam & Co.
 Gas-Tite—See Chance Co.
 General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. "Lightning." (See page 285.)
 Gill Mfg. Co., 8300 S. Chicago Ave., Chicago, Ill. (See pages 799 and 800.)
 Goshen Specialty Mfg. Co., 211-13 S. Main St., Goshen, Ind. "Z. E."
 Gra-Seal—See Universal Piston Ring Co.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Grundy Mfg. Corp., 697 Beaufait Ave., Detroit, Mich. "Permascal." (See page 807.)
 H & S—See Hanglitter & Storrs.
 Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
 Hanglitter & Storrs, 983 S. Raymond Ave., Pasadena, Cal. "H & S."
 Harvard Mfg. Co., 3355 Magnolia Ave., St. Louis, Mo.
 Hebert Mfg. Co., 575 Central St., Franklin, N. H.
 Hi-Comp—See Continental Piston Ring Co.
 Hi-Speed—See Continental Piston Ring Co.
 Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Titan."
 Hope Machine Co., 2310-12 N. Second St., Philadelphia, Pa. "Eclipse."
 Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 625.)
 Indiana Piston Ring Co., Hagerstown, Ind. "Teetor." (See page 625.)
 Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y. (See page 809.)
 J & R Shur Seal—See Super Auto Products Co.
 Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Endurance Piston Ring Co., Belleville, Ill.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia. "Sioux.")
 K. H. K.—See Kay Co.
 K-P—See Keys Piston Ring Co.
 Kant-Leek—See Kauffman Engineering Co.
 Kauffman Engineering Co., 3561-53 Laclede Ave., St. Louis, Mo. "Acme," "Kant Leek."
 Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K H K."
 Kelly—See Seal-Tite Piston Ring Co.
 Kelly Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. (See page 803.)
 Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 623.)
 Krasberg Piston Ring Works, 536 Lake Shore Drive, Chicago, Ill. "V-Plex."
 Lake Sales Co., 1947 Broadway, New York, N. Y. (Sole Distributors for Watson Piston Ring Co., Plainfield, N. J.) (See page 807.)
 Lammert & Mann Co., 215-221 N. Wood St., Chicago, Ill.
 Leak-Proof—See McQuay-Norris Mfg. Co.
 Leak-tite—See End-Oxy Appliance Co.
 Lighting—See General Utility Co.
 Longaker Co., V. A., 441-50 N. Capitol Ave., Indianapolis, Ind. "Wright."
 McCarthy Bros. & Wilson, 2220 Chestnut St., Philadelphia, Pa. (Penn., Del., Md., N. J. Va. and District of Columbia Distributors for Pedrick True-Fit Rings.) (See page 613.)
 McQuay-Norris Mfg. Co., Cooper & Southwest Sts., St. Louis, Mo. "Leak-Proof," "Superoyl."
 Master—See Schramm & Bursch Mfg. Co.
 Master—See Prescott Auto Parts Co.
 Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
 Micro Piston Ring Co., 116 Nassau St., New York, N. Y.
 Miles Piston Ring Co., Chicago, Ill. (See page 613.)
 Miller Engineering & Foundry Works, 2652 Long Beach Ave., Los Angeles, Cal. "Alloyanum."
 Modern Electric & Machine Co., 534-46 Fort Wayne Ave., Indianapolis, Ind. "R & M Conform."
 Mohawk Piston Ring Corp.—See Piston Ring Specialty Co.
 Moore Co., D. Kirke, Cleveland O. (Sole Sales Agent for American Metals Parts Corp., Boston, Mass.) "Precision."
 Munger—See Splittord Electrical Co.
 Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y.
 Niagara Piston Ring Co., 1387 Niagara St., Buffalo, N. Y.
 Nilson-Miller Co., 1300-06 Hudson St., Hoboken, N. J. "Prossen Flexo."
 No-Leak-O Piston Ring Co., Baltimore, Md. (See page 807.)
 Numethod—See Eco Mfg. Co.
 Olledge—See Seal-Tite Piston Ring Co.
 Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
 Otter Mfg. Co., 243 W. 17th St., New York, N. Y. "Super."
 P. R. Piston Ring Co., Eau Claire, Wis.
 Panyard Piston Ring Sales Co., 5800 Fort St., W., Detroit, Mich.
 Pedrick True-Fit—See Wilkenen Mfg. Co.
 Peerless Piston Ring Co., 3348-50 N. Clark St., Chicago, Ill.
 Pennsylvania Piston Ring Co., 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepeco." (See page 609.)
 Pepco—See Pennsylvania Piston Ring Co.
 Perfection Piston Ring Co., Ravenna, O. "Ultra Seal." (See page 809.)
 Permascal—See Grundy Mfg. Co.
 Piston Ring Co., Muskegon, Mich. "Sta-Tite," "Quality." (See page 631.)
 Piston Ring Specialty Co., 1966 Broadway, New York, N. Y. (Factory Distributors for Mohawk Piston Ring Corp., Cleveland, O.)
 Precision—See American Distributing Co.
 Prescott Auto Parts Co., Webster, Mass. "Master." (See page 807.)

Everything is listed under the NOUN or principal word

KELLY

ONE-PIECE PISTON RING



Oil-Proof High-Powered Quick-Seating

ANNOUNCING the—KELLY ONE-PIECE-piston ring, a new and better product—one that is based on sound engineering principles and has withstood every test under every trying condition, and found equal to all emergencies.

Manufactured by engineers with years of piston ring experience and who know the requirements and the need of a high grade piston ring and spare no expense to make the KELLY ONE-PIECE a quality product.

*Sold by jobbers at a popular
price on a money-back-guaranty.*

KELLY PISTON RING CO.

1900-1904 Third St. N. E., Minneapolis, Minn., U. S. A.

Please mention The Automobile Trade Directory

RINGS, Piston (Continued)

Pressure Proof Piston Ring Co., 107 Massachusetts Ave., Boston, Mass. (See page 687.)

Prossen Flexo—See Nilson-Miller Co.

Quality—See Piston Ring Co.

R & M Conform—See Modern Electric & Machine Co.

Rainbow Coll. Protector Co., 273 Jefferson Ave., E. Detroit, Mich.

Reus Bros. Co., 150-54 W. Mt. Royal Ave., Baltimore, Md.

S. & J. Motor Products Co., 61 Charlotte Ave., Detroit, Mich.

Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Shur-Tite."

St. Louis Piston Ring Corp., 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."

Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 635.)

Schramm & Bursch Mfg. Co., 416 Broadway, New York, N. Y. "Master."

Seal-Tite Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. "Oilodge."

Seymour Laboratorized Units, 3009 Lisbon Ave., Milwaukee, Wis.

Shur-Tite—See Saginaw Metal Parts Corp.

Shurfit—See Standard Piston Ring Co.

Sloux—See Jonas, C. N. & F. W.

Spacke Machine & Tool Co., Indianapolis, Ind.

Spittdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."

Sta-Tite—See Piston Ring Co.

Standard Motor Products Co., 4345 E. 19th St., New York, N. Y.

Standard Piston Ring Co., 1806-16 Commonwealth Ave., Boston, Mass. "Shurfit."

Star-K—See Stark-Inland Machine Works.

Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

Steam Tractor Auto Mfg. Co., 219 W. Seventh St., Sioux City, Ia. "Carbon-O."

Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "3-A."

Stevens & Co., 375 Broadway, New York, N. Y. "Non Set." (See page 201.)

Stewart Mfg. Corp., F. W. 345 W. Austin Ave., Chicago, Ill. "F. W. S."

Super—See Otter Mfg. Co.

Super Auto Products Co., 807 Ellis St., San Francisco, Cal. "J & R Shur-Seal."

Superior—See White Machine Works.

Superoyl—See McQuay-Norris Mfg. Co.

Tapco—See American Piston Co.

Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.

Teetor—See Indiana Piston Ring Co.

Tell-Tale—See St. Louis Piston Ring Corp.

Tenion—See Du Bois Piston Ring Co.

Tes-Tite Piston Ring Sales Co., Atlantic Ave., Freeport, N. Y.

3-A—See Steel Spring Piston Ring Co.

Titan—See Higginson-Gibson Mfg. Co.

Triz-Tite—See Wayland Specialty Mfg. Co.

Trione Mfg. Co.—See Bailey-Drake Co.

Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 811.)

Ultra Seal—See Perfection Piston Ring Co.

Unico—See Universal Machine Works.

U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)

U. S. Hammered Piston Ring Co., 1206 S. Grove St., Irvington, N. J.

United States Piston Ring Co., 1206 S. Grove St., Irvington, N. J. (See page 607.)

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Universal Machine Co., Bowling Green, O.

Universal Machine Works, 3610 Enright Ave., St. Louis, Mo. "Unico." (See pages 805 and 1109.)

Universal Piston Ring Co., 1426 Rock St., Rockford, Ill. "Gra-Seal." (See page 635.)

V-Flex—See Krasberg Piston Ring Works.

Vapor Tight Ring Co., 1855 E. 28th St., Minneapolis, Minn.

Victory Hammered Piston Ring Co., 288 South St., Newark, N. J.

Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.

Wainwright Engineering Corp., Connersville, Ind. (See page 715.)

Wasson Piston Ring Co.—See Lake Sales Co.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Triz-Tite."

Wedgeite Piston Ring Co., Plattsburg, N. Y.

Welewer Piston Ring Co., 1713 Canton St., Toledo, O.

Whitcomb Machine Co., Monroe, Wis.

White Machine Works, A. E., Eau Claire, Wis. "Superior."

Wilkening Mfg. Co., 15th & Mt. Vernon Sts., Philadelphia, Pa. "Pedrick True-Fit."

Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)

Wright—See Longaker Co.

Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.

Z. E.—See Goshen Specialty Mfg. Co.

RINGS, Piston, for Fords

American Hammered Piston Ring Co., Baltimore, Md. (See page 801.)

Bemiller Foundry & Machine Co.—See Eckhouse & Co.

Bu-Nite—See Butler Mfg. Co.

Burd High Compression Ring Co., Rockford, Ill.

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Chance Co., Centralia, Mo. "Gas-Tite."

Chopa Piston Ring Co., 404-06 E. Jefferson Ave., Detroit, Mich.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

D. & M. Auto Parts Co., 1003 N. E. St., Richmond, Ind. "Domor."

Detroit Piston Ring Co., Richmond & Custer Sts., Detroit, Mich. (See page 791.)

Domor—See D. & M. Auto Parts Co.

Duplex—See Piston Ring Co.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)

Eclipse—See Hope Machine Co.

Eco Co., Wormwood St., Boston, Mass. "Numethod." (See page 627.)

Efemco—See Foster, Merriam & Co.

Ever-Tyte Piston Ring Division (Walter A. Zeinicker Supply Co.), 1600 Kingsland Ave. (Wellston Dist.), St. Louis, Mo. "Ever-Tyte." (See page 813.)

Foster, Merriam & Co., Meriden, Conn. "Efemco." "Ful-A-Pep." (See page 809.)

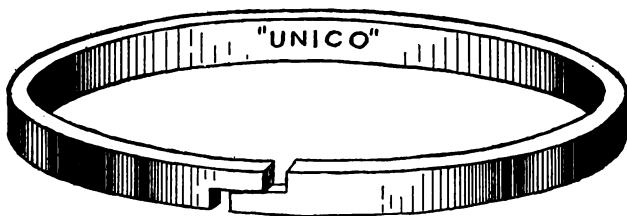
Franklin Auto Parts Co., Franklin, N. H. (Sole Distributors for Franklin Machine Co., Franklin, N. H.)

Franklin Machine Co.—See Franklin Auto Parts Co.

Everything is listed under the NOUN or principal word

"UNICO"

PLAIN PISTON RINGS



**GUARANTEED 100 PER CENT PERFECT
LIGHT TIGHT
STEP CUT OR DIAGONAL CUT**

These rings are perfectly light tight when put into a gauge.

Ground to within one-half thousandth in width.
Wall ground to within ten thousandths.

Perfect tight joint and as close on inside as on outside.

Made in all standard and oversizes.

Packed in cartons of one dozen, or wrapped in paper rolls containing 25 rings.

Specify and use "UNICO" Guaranteed Plain Rings

"HAVEN'T LEAKED YET"

Sales Department

WALTER ECKHOUSE & COMPANY

616-622 South Michigan Boulevard

CHICAGO, ILLINOIS

Manufactured by

UNIVERSAL MACHINE WORKS

ST. LOUIS

3610 Enright Avenue

MISSOURI

Please mention The Automobile Trade Directory

RINGS, Piston, for Fords (Continued)

Ful-A-Pep—See Foster, Merriam & Co.
 Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 251.)
 Gas-Tite—See Chance Co.
 Gas-Tite—See Star Specialty Mfg. Co.
 General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. "Lightning." (See page 285.)
 Grundy Piston Ring Co., 697 Beaufait Ave., Detroit, Mich. "Permasal." (See page 807.)
 Hanglitter & Storrs, 983 S. Raymond Ave., Pasadena, Cal.
 Hope Machine Co., 2310-12 N. Second St., Philadelphia, Pa. "Eclipse."
 J & R Shur-Seal—See Super Auto Products Co.
 K-P—See Keys Piston Ring Co.
 K. H. K.—See Kay Co., K. H.
 Kay Co., K. H., 967 Woodward Ave., Detroit, Mich. "K. H. K."
 Kelly Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. (See page 805.)
 Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 623.)
 Krasberg Piston Ring Works, 636 Lake Shore Drive, Chicago, Ill. "V-Plex."
 Lake Sales Co., 1947 Broadway, New York, N. Y. (Sole Distributors for Wasson Piston Ring Co., Plainfield, N. J.) (See page 807.)
 Leak-Proof—See McQuay-Norris Mfg. Co.
 Lightning—See General Utility Co.
 McQuay-Norris Mfg. Co., Cooper & Southwest Sts., St. Louis, Mo. "Leak-proof," "Superoyl."
 Master—See Schramm & Bursch Mfg. Co.
 Micro Piston Ring Co., 116 Nassau St., New York, N. Y.
 Miles Piston Ring Co., Chicago, Ill. (See page 613.)
 Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R & M Conform."
 Mohawk Piston Ring Co.—See Piston Ring Specialty Co.
 Munger—See Splittorf Electrical Co.
 Niagara Piston Ring Co., 1387 Niagara St., Buffalo, N. Y.
 No-Leak-O Piston Ring Co., Baltimore, Md. (See page 807.)
 Noonan Mfg. Co., D. R., Paris, Ill.
 Numethod—See Eco Mfg. Co.
 Oiledge—See Seal-Tite Piston Ring Co.
 Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
 Pepco—See Pennsylvania Piston Ring Co.
 Pennsylvania Piston Ring Co., 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepco." (See page 609.)
 Permasal—See Grundy Mfg. Corp.
 Piston Ring Co., Muskegon, Mich. "Duplex." (See page 631.)
 Piston Ring Specialty Co., 1966 Broadway, New York, N. Y.
 R & M Conform—See Modern Electric & Machine Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Shur-Tite."
 St. Louis Piston Ring Corp., 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."
 Schramm & Bursch Mfg. Co., 416 Broadway, New York, N. Y. "Master."
 Seal-Tite Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. "Oiledge."
 Seymour Laboratorized Units, 3009 Lisbon Ave., Milwaukee, Wis.

Splittorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."
 Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (Sole Distributor for Trump Mfg. Co., Crown Point, Ind.) (See pages 637 and 651.)
 Standard Piston Ring Co., 1306-16 Commonwealth Ave., Boston, Mass. "Surefit."
 Star-K—See Stark-Inland Machine Works.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Gas-Tite." (See page 805.)
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "3-A."
 Stevens & Co., 375 Broadway, New York, N. Y. (See page 201.)
 Super Auto Products Co., 807 Ellis St., San Francisco, Cal. "J & R Shur-Seal."
 Superoyl—See McQuay-Norris Mfg. Co.
 Surefit—See Standard Piston Ring Co.
 Shur-Tite—See Saginaw Metal Parts Corp.
 Tell-Tale—See St. Louis Piston Ring Corp.
 3-A—See Steel Spring Piston Ring Co.
 Trump Mfg. Co.—See Staff, J. Wadsworth.
 Unico—See Universal Machine Works.
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 Universal Machine Works, 3610 Enright Ave., St. Louis, Mo. "Unico." (See pages 805 and 1109.)
 V-Plex—See Krasberg Piston Ring Works.
 Vapor Tight Ring Co., 1855 E. 28th St., Minneapolis, Minn.
 Wasson Piston Ring Co.—See Lake Sales Co.
 Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)
 Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.

RINGS, Piston Ring Expanding

(Spring ring designed to be placed under old piston ring to give increased pressure)

American Auto Products Co., 1219 L St., N. W., Washington, D. C. "Nu-Life."
 Nu-Life—See American Auto Products Co.

RINGS, TIRE RETAINING—See Fillers, Tire Bead

RINGS, Tractor Quick Detachable Steering

Laxon—See Universal Lug Co.
 Universal Lug Co., 1401 S. 55th Ct., Cicero, Ill. "Laxon."

RIVET CLIPPERS—See Clippers, Bolt and Rivet

RIVET SETS—See Sets, Rivet

RIVETING JIGS—See Jigs

RIVETING MACHINES—See Machines, Brake Band Riveting

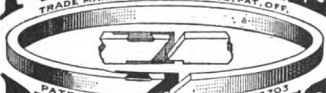
RIVETS, Brass and Copper

American Brass Co., Waterbury, Conn. (See page 105.)
 Atlas Tack Corp., Fairhaven, Mass.
 Blake & Johnson Co., Waterbury, Conn. (See page 833.)
 Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
 Bridgeport Brass Co., Bridgeport, Conn. "Crown." (See page 757.)
 Champion Brass Works, Coldwater, Mich. (See page 311.)

Everything is listed under the NOUN or principal word

PERMASEAL

TRADE MARK REGISTERED U.S. PAT. OFF.



PATENTED MAY 28 1918, NO. 1,267,703

PISTON RINGS

One-piece. Individually cast out of special formula soft gray iron. Guaranteed oil and gas tight. Patented interlocking dovetail joint. Easy to fit as ordinary angle-cut rings. Quick seating turned surface—not ground. Oil wiping groove or plain finish.

SEND FOR FREE SAMPLE

Manufacturers and dealers are requested to send for free sample, PERMASEAL PISTON RING and quantity discount sheet.

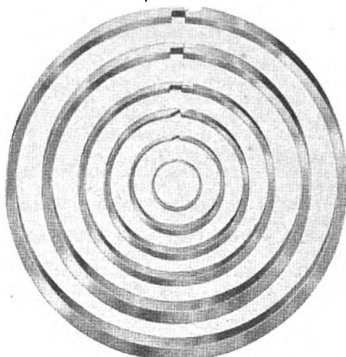
ALSO PLAIN RINGS FOR FACTORY EQUIPMENT

We are prepared to furnish plain rings for factory requirements and will be pleased to submit quotations.

GRUNDY MANUFACTURING CORP.

697 Beaufait Avenue
DETROIT MICH.

Prescott Piston Rings



Individually cast in our own Foundry from
Iron of Correct Analysis
Machine work of Highest Order
Very large Capacity

Wide variety of Standard and Oversize Rings
always in stock for immediate delivery to
Jobbing Trade

Manufactured by

Prescott Auto Parts Co., Webster, Mass.

TORSION TEST WASSON-LAKE PROCESSED RINGS

Extra Profits
For You In
Our Intro-
ductory Price

Write For
List of
Perform-
ances

ELIMINATES MOST REGRINDING

LAKE SALES COMPANY

1947 Broadway New York City, N. Y.

50% Saving In Oil Guaranteed

NO CARBON - MORE POWER - LESS FUEL



NO-LEAK-O

THE RING WITH A REASON

The cylinder walls of all gasoline motors warp and wear and the piston ring cannot conform to the warped places. The explosion and other forces destroy the seal of oil as it passes over these places; the gas escapes and oil passes up.

"NO-LEAK-O" "OIL SEALING" Piston Rings have a 45 degree angle groove full of oil, which pulsates as the piston moves up and down and KEEPS a film of oil between the ring and the cylinder wall REGARDLESS of warped or worn places on the cylinder wall. The motor maintains maximum power.

RESTORES POWER IN OLD MOTORS WITHOUT REBORING. ON MARKET 5 YEARS. OVER 20,000,000 IN USE. POPULAR THROUGH SERVICE. PRICE 50c UP. If your jobber cannot supply you, order direct.

FACTORY: MUSKEGON, MICH. NO-LEAK-O PISTON RING CO., BALTIMORE, MD.

Please mention The Automobile Trade Directory

RIVETS, Brass and Copper (Continued)

Clendenin Bros., Central Ave. & Fawn St., Baltimore, Md.
 Cleveland Wrought Products Co., W. 58th St., South of Denison Ave., Cleveland, O. (See page 825.)
 Cobb & Drew, Plymouth, Mass.
 Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
 Crown—See Bridgeport Brass Co.
 Eagle—See Plume & Atwood Mfg. Co.
 Falls Rivet Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3556 E. 73d St., Cleveland, O. "Perfection."
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 617.)
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn. "Eagle."
 Progressive Mfg. Co., 53 Norwood St., Torrington, Conn.
 Raybestos Co., Bridgeport, Conn. (See page 577.)
 Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
 Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
 Stimpson Co., Edward B., 70 Franklin Ave., Brooklyn, N. Y.
 Waterbury Brass Goods Corp., 100 Washington Ave., Waterbury, Conn.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

RIVETS, CLINCH—See Rivets, Tubular

RIVETS, CONTACT—See Platinum; also Points, Sparking

RIVETS, COPPER—See Rivets, Brass

RIVETS, Iron and Steel

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
 American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O. (See page 831.)
 Champion Rivet Co., Harvard Ave. & Erie R. R., Cleveland, O. "Victor."
 Cobb & Drew, Plymouth, Mass.
 Columbus Bolt Works Co., Columbus, O. (See page 147.)
 Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
 Falls Rivet Co., Kent, O.
 Garland Mfg. Co. (W. Pittsburgh), Pittsburgh, Pa.
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 617.)
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 Lamson & Sessions Co., 2133 Scranton Rd., Cleveland, O.
 Michigan Bolt & Nut Works, Ft. Meldrum Ave., Detroit, Mich.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Pittsburgh Screw & Bolt Co., Preble Ave. (N. B.), Pittsburgh, Pa.
 Plymouth Mills, Billington St., Plymouth, Mass.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Upson Nut Co., Unionville, Conn.
 Victor—See Champton Rivet Co.

RIVETS, PLATINUM—See Platinum; also Points, Sparking

RIVETS, STEEL—See Rivets, Iron

RIVETS, Tubular and Clinch

Thompson Mfg. Co., Judson L., Waltham, Mass.
 Tubular Rivet & Stud Co., Boston, Mass. (See page 811.)

ROAD GUIDES—See Maps, Road

ROAD MAPS—See Maps, Road

ROAD SIGNS—See Signs, Special Road

ROBE LOCKS—See Locks, Robe

ROBE RAIL BAGS—See Bags, Coat Rail

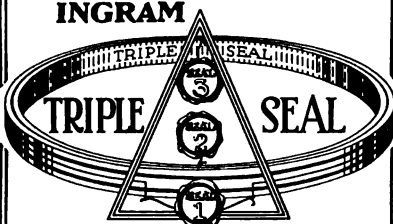
ROBE RAILS—See Rails, Robe

ROBES, Automobile Lap

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Fruent-Seat."
 Ayres & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.
 B. E. Mfg. Co., 210 18th St., Long Island City, N. Y. "Bemco." (See page 313.)
 Ballard & Co., J. O., Pine St., Malone, N. Y.
 Beckman Co., 3167 Fulton Rd., Cleveland, O.
 Bemco—See B. E. Mfg. Co.
 Bishop Co., J. H., Wyandotte, Mich.
 Blumenthal & Co., Sidney, 395-401 Fourth Ave., New York, N. Y.
 Burlington Blanket Co., 711 Oregon St., Burlington, Wis.
 Chase & Co., L. C., Boston, Mass.
 Chippewa Falls Woolen Mill, Chippewa Falls, Wis.
 Cleveland Woolen Mill Co., Cleveland, O.
 Colonial Woolen Mills Co., Cleveland, O.
 Comfort Auto Robe Co., Waterloo, N. Y.
 Crosby-Frislan Fur Co., 571 Lyell Ave., Rochester, N. Y.
 Curtis & Von Bernuth Mfg. Co., 88 W. Broadway, New York, N. Y.
 Davis, Geo. W., 32 Southgate St., Worcester, Mass.
 Dawson, J. & E., Palethorp & Somerset Sts., Philadelphia, Pa. "Name-On."
 Draper Bros. Co., Canton, Mass.
 Dusenbury & Co., Louis, 229 Fourth Ave., New York, N. Y. (See page 983.)
 Fruent-Seat—See Automobile Apparel Co.
 Gausler & Starr Co., Delaware & Walnut Sts., Philadelphia, Pa.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
 Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.
 Motorwear—See Wallace Co.
 Name-On—See Dawson, J. & E.
 New Process Co., Warren, Pa.
 New York Lap Robe Co., 219 Greene St., New York, N. Y.
 Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
 Patrick-Duluth Woolen Mills, Duluth, Minn.

Everything is listed under the **NOUN** or principal word

INGRAM



TRIPLE SEAL

PISTON RING
(PATENTED)
BEST BY TEST

ROTARY HAMMERED
THE RING THAT EFFICIENCY AND
ECONOMY DEMAND
THE HIGHEST GRADE, REALLY
LEAKLESS RING OF THEM ALL

GUARANTEED

Will positively prevent leakage of compression and by-passing of lubricating oil. Write at once for full details and discounts to the trade.

THE INGRAM MOTOR CO., Inc.
1041-D Bay Street
ROSEBANK, STATEN ISLAND, N. Y.
(Greater New York City)

Exclusive Foreign Sales Agents:
THE W. H. ALLISON CO.
519 Dime Bank Building, Detroit, Mich.
AUTOMOTIVE PRODUCTS COMPANY
8 Berners Street, London, W. 1, England



—for Quick Deliveries

No waits for EFEMCO Piston Rings. We have an ample stock to fill orders of any size and to make immediate shipments.

EFEMCO Piston Rings are all tested to superfine micrometric limits. The rings that don't "measure up" are rejected. This is why you make friends with every set of EFEMCO Piston Rings you sell.

FOSTER, MERRIAM AND CO.
MERIDEN, CONNECTICUT U.S.A.

Efemco Products

Automobile Accessories
Grey Iron Castings
Piston Rings



Standardized by
80 years of service

Important Piston Ring FACTS

Piston Rings in Any Quantity

We have a daily output capacity of 45,000 rings and available capital for unlimited expansion.

Men at the head of our Company have been actively prominent in the manufacturing of PISTON RINGS for the last seven years—in a word, we have a complete organization.

If you have any PISTON RING problem, our Engineering Department will be glad to solve it for you.

* * *

ULTRA SEAL NON-LEAK PISTON RINGS are distinctive from other rings in that they go through an improved process of shrinking and compressing the metal, thus leaving the outer diameter soft, so that it does not wear the cylinder walls.

Every ring is tested for its tensile strength, gauged and inspected before leaving the factory.

As we have said, if you are in the market for PISTON RINGS, we are in an exceptional position to supply your wants. Let us hear from you.



The Perfection Piston Ring Company
RAVENNA, OHIO

Please mention The Automobile Trade Directory

ROBES, Automobile Lap (Continued)

Perfection Robe Co., 16 S. Market St., Chicago, Ill.
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Revillon Frères, 19 W. 34th St., New York, N. Y.
 Riley & Co., Wm. B., 233 Chestnut St., Philadelphia, Pa.
 Shayne & Co., C. C., 126 W. 42d St., New York, N. Y.
 Shelton Looms, Shelton, Conn.
 Sho-Fur—See Wisconsin Garment Co.
 Stroock & Co., S., 11-15 E. 26th St., New York, N. Y.
 Unity Lap Robe Mfg. Co., 49 E. 21st St., New York, N. Y.
 Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Motorwear."
 Wisconsin Garment Co., 711 Origen St., Burlington, Wis. "Wulauto," "Sho-Fur."
 Wulauto—See Wisconsin Garment Co.

ROBES, Special Lap, for Fords

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Fruent-Seet"
 Fruent-Seet—See Automobile Apparel Co.
 Hopewell Bros., Watertown, Mass. (See page 641.)
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

ROCKER ARM SHAFTS—See Screw Machine Products to Order**ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Radius Rods****ROD CUTTERS—See Cutters, Rod and Bar****ROD GAGES FOR FORDS—See Gages, Connecting Rod****RODS, Adjustable Valve Lift**

(See also Machine Work; also Screw Machine Products)

Bard Mfg. Co., Royersford, Pa. (See page 709.)
 Bridgeport—See Lyford Bros.
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich. "Zephyr."
 Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
 Lyford Bros., 625 Washington Ave., Bridgeport, Conn. "Bridgeport."
 Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
 National Steel Products Co., 2270 Franklin St., Detroit, Mich.
 Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 147.)
 Recording Devices Co., 554 W. Fifth St., Dayton, O.
 Rich Steel Products Co., Springfield Pl., Battle Creek, Mich.
 Steel Products Co., Cleveland, O. (See page 145.)
 Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)
 Zephyr—See Goodnow & Blake Mfg. Co.

RODS, Adjustable Valve Lift, for Fords

(For Valve Stem Adjusters—See Adjusters, Valve Stem)

Acme Mfg. Co., Boonton, N. J.
 B-N—See Burgess-Norton Mfg. Co.
 Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Detroit Screw Works, 1438 Franklin St., Detroit, Mich.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

RODS, ALIGNING JIG CONNECTING FOR FORDS—See Jigs, Connecting Rod Aligning.**RODS, ALUMINUM—See Aluminum, Sheet****RODS, Brake**

(Brake Rods complete with yoke or eye rod ends to blue print or specification)

Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.
 Jacobs Co., F. L., 343 Bellevue Ave., Detroit, Mich. (See page 811.)
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.
 Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich.
 Standard Parts Co., Cleveland, O. (See page 283.)
 Steel Products Co., (Michigan Plant) 7731 Conant Ave., Detroit, Mich.
 Steel Products Co., Cleveland, O. (See page 145.)

RODS, BRASS—See Brass, Sheet**RODS, Connecting**

(Finished or Machined Rods for connecting rods to the rough—See Forgings, Drop)

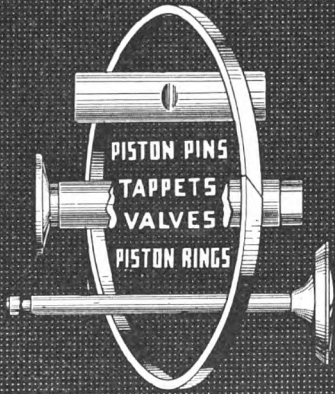
Bonney Forge & Tool Works, Allentown, Pa.
 Carde Stamping & Tool Co., West Side, Saginaw, Mich.
 Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
 Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Layman Pressed Rod Co., 25 Broad St., New York, N. Y. "Pres-Tube."
 Leard Co., William, New Brighton, Pa. (See page 311.)
 Perfection Auto Parts Co., 410 Lakeside Ave., N. W., Cleveland, O.
 Pres-Tube—See Layman Pressed Rod Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Super-Lite."
 Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill.
 Standard Gauge Steel Co., Beaver Falls, Pa.
 Super-Lite—See Saginaw Metal Parts Corp.
 Tindel-Morris Co., Eddystone, Pa.
 Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)

Everything is listed under the NOUN or principal word

BRAKE RODS

Complete Brake Rod
Assemblies
made to Blue Prints

F. L. JACOBS CO.
343 Bellevue Ave. Detroit, Mich.



WILCOX MOTOR & MANUFACTURING CO.
SAGINAW - MICHIGAN

TRINDL

PISTON PINS PISTONS—RINGS

STANDARD—OVERSIZE—SPECIAL

We carry a Large Stock for Service

Prompt Delivery on Quantity Orders

Cylinder Grinding—Crankshaft Grinding

FLY-WHEEL
STARTER GEARS

SCORED CYLINDERS REPAIRED

CONNECTING ROD
BEARINGS

THE TRINDL CO.

Wabash Avenue at Twenty-ninth Street

CHICAGO, ILL.

TUBULAR AND CLINCH RIVETS



TUBULAR RIVET AND STUD CO., BOSTON MASSACHUSETTS, U.S.A.

Please mention The Automobile Trade Directory

RODS, Connecting, for Fords

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Spencer Rods.) (See page 243.)

Au-To Compressor Co., Wilmington, O. "Oro." Canton Co., A. S., 174 Franklin St., New York, N. Y.

Craig-Hunt—See Speedway Engineering Co. Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 251.)

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for B. E. Hedges Co., Auburn, N. Y.)

Green Bay Drive Calk Co., State & Ninth Sts., Green Bay, Wis.

Grossman Auto Parts Co., White Plains, N. Y. Harley Co., Page Blvd., Springfield, Mass. "Seco." (See pages 205 and 415.)

Healy Tool & Appliance Co., 297 Washington St., Buffalo, N. Y.

Hedges Co.—See Gray Andrews Corp.

Hussey Power Parts Co., Gliddings Rd., Cleveland, O.

Kraeuter & Co., Newark, N. J. (See page 1001.)

Niagara Motors Corp., Dunkirk, N. Y. (See page 693.)

Oro—See Au-To Compressor Co.

Se-Co—See Stacks Engineering Co.

Seco—See Harley Co.

Specialty Products Co., 494 Mulberry St., Newark, N. J.

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 409.)

Spencer Metal Products Co., Spencer, O. (See page 508.)

Stacks Engineering Co., 216-20 W. Ontario St., Chicago, Ill. "Se-Co."

T. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)

Wayne Engineering Co., 1400 Broadway, New York, N. Y.

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)

RODS, COPPER—See Brass, Sheet

RODS, FIBRE—See Fibre, Hard

RODS, Gasoline Cock Control, for Fords

Sunderman Corp., Newburgh, N. Y. (See page 393.)

RODS, PUSH—See Rods, Adjustable Valve

RODS, Radius

A. S. P.—See Larimer Co.

B-N—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)

Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 289.)

Larimer Co., 62 N. La Salle St., Aurora, Ill. "A. S. P."

RODS, Radius, for Fords

(Auxiliary radius rods or braces for front axles)

All-In-One—See Tungsten Mfg. Co.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)

A-S-P—See Allied Steel Products Co.

A. S. P.—See Larimer Co.

Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Spencer Rods.) (See page 243.)

Automat-Co.—See Automotive Material Co. Automotive Material Co., Chicago, Ill. "Automat-Co." (See page 919.)

B. B.—See Bayne Mfg. Co.

B-N—See Burgess-Norton Mfg. Co.

Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Bayne Mfg. Co., Bushnell, Ill. "B. B." (See page 669.)

Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.

Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.

Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Bullinger Mfg. Co., 838-42 N. Wells St., Chicago, Ill.

Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. "B-N." (See page 627.)

Burlington Motor Truck Co., 1919 W. 19th St., Chicago, Ill.

Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich.

Casco Mfg. Co., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."

Cooper Auto Supply Co.—See Casco Mfg. Co.

Cox Brass Mfg. Co., Albany, N. Y. (See page 171.)

Dependable—See Gahm-McCormick Co.

Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.

Donlin Auto Co., C. A., Hopkins, Mo.

Dow Wire & Iron Works, Louisville, Ky. (See page 159.)

Duham Co., Thos., Aurora, Ill. (See page 163.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Stone Accessories Mfg. Co., Chicago, Ill.)

Frazier & Co., W. S., Aurora, Ill.

Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 251.)

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable." (See page 249.)

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Manufacturing Accessories Corp., Brooklyn, N. Y. "Maco.")

Green Bay Drive Calk Co., State & Ninth Sts., Green Bay, Wis.

Halls, A. S., Ortonville, Minn.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Slip-In."

Humboldt—See Republic Auto Parts Co.

Illinois Brass Mfg. Co., 224-30 W. Ontario St., Chicago, Ill.

J. C. M.—See Jersey City Machine Co.

Jersey City Machine Co., 115 Plymouth St., Jersey City, N. J. "J. C. M."

Ketter-Elliott Co., 3153 S. California Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

THOMAS A. EDISON, Inc.

A.W. ALMQUIST
AUTOMOTIVE ENG SERVICE

THOMAS A. EDISON LABORATORY
MEMBER OF S A E

ORANGE, N.J.

May 3, 1920.

The Ever Tight Piston Ring Co.
St. Louis, Mo.

Gentlemen:

The Zelnicker Ever-Tyte Piston Rings submitted have been tested on a block Dynamometer as well as on the road for 2000 miles in a Ford car and have proved satisfactory in every respect. Using Ford Standard Champion Spark Plugs, Ford Standard Holley Carburetor, Standard gasoline S.P.G. at 60 degree F. - 60 degree Be. and Mobile Oil, grade E, the following improvements in engine were shown over the old rings:

Increase in compression-----	25%
Increase in power-----	12%
Decrease in gasoline consumption-----	12%
Decrease in carbon deposit-----	35%
Decrease in wall friction-----	10%

I can assure you that I have not found a piston ring superior to yours and I can recommend Zelnicker Ever-Tyte Piston Rings very highly to the trade in general.

Very respectfully yours,

A.W. Almquist



WILL ACCOMPLISH
BIG SAVINGS in AUTOS, TRUCKS,
TRACTORS, ENGINES, PUMPS,
COMPRESSORS, ETC., IN ALL
SIZES UP TO 140 INCHES.

EVER - TYTE PISTON RING DIVISION

WALTER A. ZELNICKER SUPPLY CO.

1600 Kingsland Ave. (Wellston District)

St. Louis, Mo.

RODS, Radius, for Fords (Continued)

Larimer Co., 62 N. La Salle St., Aurora, Ill.
 "A. S. P."
 McKinnon Dash Co., Buffalo, N. Y.
 (See page 403.)
 Maco—See Gray-Andrews Corp.
 Manufacturing Accessories Corp.—See Gray-Andrews Corp.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Midway Mechanical Co., St. Paul, Minn.
 Monnich-Gaylord Co., Hooper, Neb.
 Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
 Niagara Motors Corp., Dunkirk, N. Y.
 (See page 683.)
 Ostlund Bros., Ortonville, Minn.
 Radius Rod Co., Lamoni, Ia. "H & M."
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
 Rex—See Cleveland Heater Co.
 Se-Co—See Stacks Engineering Co.
 Shunk Mfg. Co., Bucyrus, O.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
 Slip-In—See Hudson Motor Specialties Co.
 Spencer Metal Products Co., Spencer, O.
 (See page 508.)
 Stacks Engineering Co., 216-20 W. Ontario St., Chicago, Ill. "Se-Co."
 Standard Auto Accessory Co., 100 Mill St., Leipsic, O.
 Standley Skid Chain Co., Boone, Ia.
 (See page 381.)
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)
 Stone Accessories Mfg. Co.—See Eckhouse & Co.
 Tube Products Co., 2699 Guoin St., Detroit, Mich.
 Tungsten Mfg. Co., Marshalltown, Iowa.
 "All-in-One." (See page 720.)
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)
 Vaughn-Harris Co., Vermillion, S. Dak.
 W-A—See Whetstone & Co.
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W. A."

RODS, Rear Axle Truss, for Fords

(For reinforcing or strengthening rear axle)

Advance Auto Specialty Mfg. Co., 10629 Garfield Ave., Cleveland, O. "Never-Slip."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Christianson Harrow Works, Sioux Falls, S. Dak.
 Dependable—See Gahm-McCormick Co.
 Dow Wire & Iron Works, Louisville, Ky.
 (See page 159.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Efemco—See Foster, Merriam & Co.
 Excelsior Auto Parts & Supply Co., Botsford, Conn.

Foster, Merriam & Co., Meriden, Conn.
 "Efemco." (See page 809.)

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable."
 (See page 249.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
 (See page 987.)

Humboldt—See Republic Auto Parts Co.

Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Never-Slip—See Advance Auto Specialty Mfg. Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 865.)

Sunvold & Larson Mfg. Co., Sacred Heart, Minn.

W-A—See Whetstone & Co., John H.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

RODS, RUBBER—See Rubber, Hard

RODS, STEEL—See Steel

RODS, STEERING—See Connections, Steering

RODS, STEERING, FOR FORDS—See Links, Steering

RODS, TRUSS FOR FORDS—See Rods, Rear Axle Truss

RODS, VALVE LIFT—See Rods, Adjustable Valve

RODS, Welding

Carbox—See Central Steel & Wire Co.

Central Steel & Wire Co., 119 N. Peoria St., Chicago, Ill. "Svedox," "Lektrox," "Cra-box," "Nonox," "Castox," "Vanox," "Kromox."

Castox—See Central Steel & Wire Co.
 Eagle Smelting & Refining Works, Trenton, N. J.

Kromox—See Central Steel & Wire Co.
 Lektrox—See Central Steel & Wire Co.

Monox—See Central Steel & Wire Co.

Svedox—See Central Steel & Wire Co.

Trenton Smelting & Refining Co., Canal & Pearl Sts., Trenton, N. J.

Vanox—See Central Steel & Wire Co.

ROLLER BEARINGS—See Bearings, Roller

ROLLER BEARINGS FOR FORDS—See Bearings, Drive Gear, Ball and Roller Thrust

Everything is listed under the NOUN or principal word

REX



Rex DeLux Mica
1/2 in. No. 39

**For Spark Plug
Efficiency
and Quality**

The Rex Spark Plug
is Made in All Sizes

**A Size for Every Car,
Truck, Tractor, and
All Stationary Gas
Engines.**

*Write today for the
attractive proposition
that we offer to dealers*

**REX IGNITION
MFG. CO.**

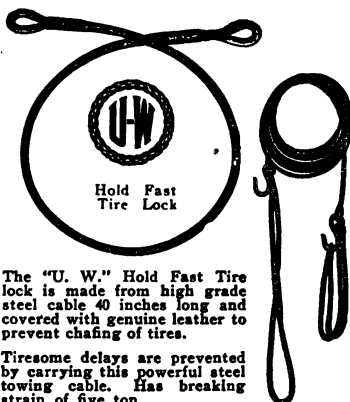
**250 W. 54th Street
New York City**

Philadelphia Chicago

Los Angeles

Kansas City San Francisco

Pull-Out Line



Hold Fast
Tire Lock

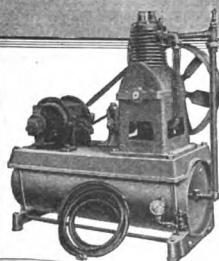
The "U. W." Hold Fast Tire lock is made from high grade steel cable 40 inches long and covered with genuine leather to prevent chafing of tires.

Tiresome delays are prevented by carrying this powerful steel towing cable. Has breaking strain of five ton.

THE UPSON-WALTON CO.

Established 1871

NEW YORK 291 Broadway	CHICAGO 711 S. Wells St.	CLEVELAND 1310 W. 11th St.
PITTSBURGH 1103 Bessemer Bldg.	NEW ORLEANS, LA. 304 Canal Bank Bldg.	DETROIT, MICH. 716 Farwell Bldg.
DENVER, COLO. 1633 Tremont Place		



CURTIS Two-Stage Air Compressors

An original design embodying all the good features of the Curtis Single Stage plus all possible advantages of two-stage compression. Aeroplane type (COPPER) inter-cooler with thin copper radiating fins rigidly attached, assuring most efficient cooling and fullest advantage of two-stage compression. Built in several styles in two capacities. Ask your jobber. Rather than accept a substitute, write us direct.

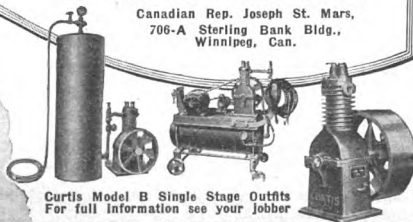
CURTIS PNEUMATIC MACHINERY CO.

1560 Kienlen Avenue St. Louis, Mo.

BRANCH OFFICE

532-N Hudson Terminal New York City

Canadian Rep. Joseph St. Mars,
706-A Sterling Bank Bldg.,
Winnipeg, Can.



Curtis Model B Single Stage Outfits
For full information see your jobber

Please mention The Automobile Trade Directory

ROLLER CHAINS—See Chain, Transmission

ROLLERS, Curtain

(For curtains in Moussines or other closed cars)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.

Cary-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa. "Edw. Reukauf."

Cowles & Co., C., New Haven, Conn.
Curtain Supply Co., 350 W. Ontario St., Chicago, Ill. "Rex."

Edw. Reukauf—See Carey-McFall Co.
English & Meralck Co., New Haven, Conn. (See page 571.)

Hartshorn Co., Stewart, 250 Fifth Ave., New York, N. Y.

Rex—See Curtain Supply Co.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Turnstedt Mfg. Co., Artillery & Muster Ave., Detroit, Mich. (See page 785.)

Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

ROLLING MACHINES—See Machines, Fender Rolling

ROLLS, TOOL—See Bags, Tool

ROOMS, DRYING—See Rooms, Paint and Varnish Drying

ROOMS, Paint and Varnish Drying

Drying Systems, 11-17 S. Desplaines St., Chicago, Ill. "Greiff." (See page 379.)

Greiff—See Drying Systems.

ROPE CLAMPS—See Clamps, Wire Rope

ROPE or CABLE, Bronze Wire

(For operating brakes or out-puts)

American Brass Co., Waterbury, Conn. (See page 165.)

Elephant—See Phosphor Bronze Smelting Co.
Omega—See Riverside Metal Co.

Phosphor Bronze Smelting Co., 2300 Washington Ave., Philadelphia, Pa. "Elephant."

Reeves & Co., Paul S., 1415-25 Catherine St., Philadelphia, Pa.

Riverside Metal Co., Riverside, N. J. "Omega."

ROPE or CABLE, Steel Wire

(For operating brakes or out-puts)

American Steel & Wire Co., Chicago, Ill. (See page 819.)

Atlas—See Fischer & Hayes Rope & Steel Co.
Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo.

Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill. "Atlas." (See page 569.)

Harard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.

Roebbling Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.

Waterbury Co., 63 Park Row, New York, N. Y.

ROPES, CHAINS and BARS, Tow

American—See Fairbanks Co.

American Chain Co., Bridgeport, Conn. (See page 548.)

American Steel & Wire Co., Chicago, Ill. (See page 819.)

Au-To-To—See Walte-Rhoads Co.
Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)

Baseline Autowline—See Broderick & Bascom Rope Co.

Bellevue Mfg. Co., Bellevue, O. "Buck-eye." (See page 311.)

Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Berline Kant Kink." (See page 655.)

Berline Kant Kink—See Berger & Co.
Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo. "Baseline Autowline."

Buckeye—See Bellevue Mfg. Co.

Bull Dog—See Chain Products Co.

Chain Products Co., 3924 Cooper Ave., Cleveland, O. "Bull Dog."

Channon Co., H., 150 N. Market St., Chicago, Ill.

Cleveland Chain & Mfg. Co., Cleveland, O.

Cooper Mfg. Co.—See Fulton Co.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.

Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 817.)

Excelsior—See Wickwire Spencer Steel Corp.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)

Fischer & Hayes Rope & Steel Co., 741-45 W. Van Buren St., Chicago, Ill. (See page 569.)

Fulton Co., Dept. S, 75th and National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Iowa.) (See page 1022.)

Gist Auto Supply Co., 1711 Grand Ave., Kansas City, Mo.

Hercules—See Leschen & Sons Rope Co.

Hinckley-Myers Co., Water St., Jackson, Mich.

Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

Hogarty, Edward, Mill St., Unionville, Conn. "Utility."

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Simplicity Products Mfg. Co., Milwaukee, Wis.)

K-H-K—See Kay Co.

Kant-Kink—See Edstrom Machinery Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K-H-K."

Keepers, J. C., 213 W. Park St., Olathe, Kans.

Kimkin—See Kimmerle Bros.

Kimmerle Bros., 683 Golden Gate Ave., San Francisco, Cal. "Kimkin."

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.

Leschen & Sons Rope Co. A., 5909 Kennerly Ave., St. Louis, Mo. "Hercules."

Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.

Robinson-Carter Co., 1711 Grand Ave., Kansas City, Mo. (See page 285.)

Rochester Rope Goods Co., 330 Florida St., Milwaukee, Wis.

S-O-S—See Hite Mfg. Co.

Service Station Equipment Co.—See Fairbanks Co.

Simplicity Products Mfg. Co.—See Jonas, C. N. & F. W.

Everything is listed under the NOUN or principal word

Edstrom

KANT KINK

TOWLINES TIRE LOCKS

The Edstrom Kant Kink Towline is the first towline to be offered to motorists that carries a guarantee against kinking. It is made of Special Steel cable that withstands greater stress and has smaller bulk than any other cable for the same load. The sling is of manila rope.

PRICES

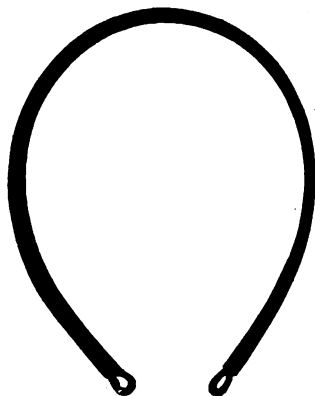
1/4 Size	\$6.50
3/8 Size	\$9.50

Length 20 Feet



Kant Kink Tire Locks are made of the same strand and are covered with high grade Chrome Tanned leather. They keep the spare where it belongs, and discourage the tire thief.

Price \$1.75



The guarantee against kinking has a big appeal to the motorist. There will be a big demand. The profits are most satisfactory. Write us today for full details and our terms to the trade.

EDSTROM MACHINERY COMPANY

Cary (near Chicago), Illinois

Sales Department:

JESSOP & THOMPSON, 1421 S. Michigan Ave., CHICAGO, ILL.

Please mention The Automobile Trade Directory

ROPES, CHAINS AND BARS, Tow (Continued)

Smith Mfg. Co., C. F., 530 S. First St., De Kalb, Ill.
 Superior Mfg. Co., High Ave. at Second St., Cleveland, O.
 U. W.—See Upson-Walton Co.
 United States Chain & Forging Co., Thompson Ave., Pittsburgh, Pa.
 Universal Safety Towing Bar Co., Buffalo, N. Y.
 Upson-Walton Co., 1310 W. 11th St., Cleveland, O. "U. W." (See page 815.)
 Utility—See Hogarty, Edward.
 Waite-Rhoads Co., 1455 S. Broadway, Denver, Colo. "Au-To-To."
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)
 Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 649 and 819.)
 Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis.

ROTARY CUTTERS—See Saws and Cutters, Rotary

ROTARY HACK SAWS—See Saws and Cutters, Rotary

ROTARY RASPS—See Tools, Tire Vulcanizing

ROTARY SHEARS—See Shears, Rotary

ROTATORS, Valve

Garlock Valve Rotator Co., 201 Peterson St., Paterson, N. J.

ROUGH STUFF—See Fillers, Paint

RUBBER BATTERY JARS—See Jars, Rubber Battery

RUBBER BUCKETS—See Buckets, Collapsible

RUBBER BUMPERS—See Bumpers, Rubber Spring

RUBBER CEMENT—See Cement, Tire; also Tubing, Soft Rubber

RUBBER COATED CLOTH—See Cloth, Rubber Coated

RUBBER CONNECTORS—See Tubing, Soft Rubber

RUBBER CORD, AIRPLANE—See Cord, Airplane Rubber

RUBBER CUTTING KNIVES—See Knives, Tire Repair

RUBBER FUSELAGE WIRE PROTECTORS, AIRPLANE—See Protectors, Airplane Fuselage Wire

RUBBER GAS BAGS—See Bags, Rubber Gas

RUBBER GASKETS—See Packing

RUBBER GLOVES—See Gloves, Rubber

RUBBER GRIPS, AIRPLANE—See Grips, Airplane Rubber

RUBBER HAMMERS—See Mallets, Rubber

RUBBER, Hard

(Sheet, Rod and Tube)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."
 Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
 Reliance—See Dugas-Hundley Corp.
 Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.
 Vulcanized Rubber Co., 251 Fourth Ave., New York, N. Y.

RUBBER HORN BULBS—See Bulbs, Rubber Horn

RUBBER HOSE—See Hose, Rubber

RUBBER MALLETs—See Mallets, Rubber

RUBBER MATS—See Mats, Rubber

RUBBER MATTING—See Mats, Rubber

RUBBER PACKING—See Packing, Rubber

RUBBER PAINTS—See Paints, Rubber

RUBBER PATCHES—See Patches, Tire Repair

RUBBER PLUGS—See Plugs, Tire Repair

RUBBER PRESERVATIVES—See Compounds, Tire Preserving

RUBBER PUTTY—See Compounds, Tire Repair

RUBBER RADIATOR CAPS—See Caps, Rubber Radiator

RUBBER ROD—See Rubber, Hard

RUBBER SHEET—See Rubber, Hard

RUBBER SPRING BUMPERS—See Bumpers, Spring

RUBBER TESTING INSTRUMENTS—See Instruments, Rubber and Felt Testing

RUBBER TIRES—See Tires

RUBBER TUBING—See Tubing, Soft Rubber

RUBBER WIRE STREAMLINING, AIRPLANE—See Streamlining Airplane Rubber Wire

RUBBERS, TIRE PUMP CONNECTION—See Washers, Tire Pump

RUBBING MACHINES, BODY—See Machines, Body Rubbing

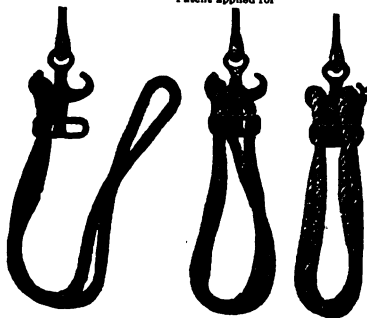
Everything is listed under the NOUN or principal word

American Steel & Wire Co.'s

Auto Towing Cables

For Passenger Car Service

Patent applied for



Manila Loop attached. Always remains in loop. Can be detached when loop wears out.

Other end being inserted. Large ring provided to easily insert loop, the water and sand soaked.

End of Loop hooked—ready for towing. Quadruple strength—firmly attached. No loosening and dropping the tow.

It is Neither Safe Nor
Prudent Not to Have
One in the Car.

Booklet describing--free

Ignition and Lighting Cables

Rubber Covered, Tape Covered,
or Steel Armored

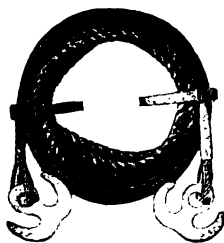
We make every variety
for adaptation to all
automobile uses.

Illustrated Catalogue free

American Steel & Wire
Chicago - New York Company

Every Car Should Carry a Towline

Thousands of car owners are coming to look upon a "Towline" as they do upon carrying a spare tire—this is the reason why more and more towlines are sold every year.



How Many Do You Sell?

Do you realize that every car owner that comes into your store or garage is a possible customer for a towline? Then why not sell him one? The "Excelsior" Towline is made for both pleasure cars and trucks. Compactly coiled and packed in a neat canvas bag.

EXCELSIOR
BRAND

*Write Us Today for Terms to the
Trade*

WICKWIRE SPENCER STEEL CORPORATION
Worcester, Mass. Buffalo, N. Y.

Sales Offices and Warehouses:

Boston	New York	Philadelphia
Detroit	Chicago	Tulsa, Okla.
	San Francisco	

Please mention The Automobile Trade Directory

RUNNING BOARD BRACES FOR FORDS

—See Braces

RUNNING BOARD MATS—See Mats, Step or Running Board**RUNNING BOARD MOULDING — See Moulding****RUNNING BOARD PLATES—See Plates, Heel, Pedal or Step****RUNNING BOARD SUPPORTS—See Braces, Running Board****RUNNING BOARDS—See Boards, Running****RUNNING GEAR ALIGNERS—See Gages, Wheel Aligning****RUST PREVENTING COMPOUNDS — See Compounds, Rust Preventing****RUST PROOFING—See Galvanizing****RUST REMOVING COMPOUNDS — See Compounds, Rust Preventing****S-WRENCHES—See Wrenches, Nut and Bolt****SADDLES, Motorcycle**

Mesinger Mfg. Co., H. & F. Austin Pl. & E. 144th St., New York, N. Y.

Superior Metal Products Co., Elyria, O. (See page 895.)

SAFETY BELTS—See Belts, Aviator's Safety**SAFETY STARTING CRANKS — See Cranks, Safety****SAFETY TOW HOOKS—See Hooks, Safety Tow****SALTS, SOLDERING—See Flux, Soldering****SAND BOXES—See Boxes, Sand****SAND PAPER—See Paper, Emery and Sand****SANDERS, Generator Brush for Fords***(Tools for cleaning and polishing brushes of starting and lighting generators.)*

Hinckley-Myers Co., Water St., Jackson, Mich.

SANDERS, ROAD—See Boxes, Sand**SAW BLADES—See Blades, Hack Saw****SAWS, Band**

American Saw Mill Machinery Co., Hacketts-town, N. J.

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Bentel & Margendant Co., Hamilton, O.

Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.

Cordesman-Rechtin Co., Cincinnati, O.

Crescent Machine Co., Leontonia, O.

Defiance Machine Works, 484 Perry St., Defiance, O.

Fay & Egan Co., J. A., Cincinnati, O.

Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.

Hiles & Co., C. A., 14th & Western Ave., Chicago, Ill.

Jones Superior Machine Co., 1253-72 W. North Ave., Chicago, Ill.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Marston & Co., J. M., 226-28 Ruggles St., Boston, Mass.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Prybil Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Root Co., B. M., 30-36 Jefferson Ave., York, Pa.

Silver Mfg. Co., Salem, O.

Simonds Mfg. Co., North St., Fitchburg, Mass.

Smith Machine Co. H. B., Smithville, N. J.

Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.

West Side Iron Works, 327-29 Front Ave., N. W., Grand Rapids, Mich.

Woodworkers Tool Works, Chicago, Ill. (See page 821.)

SAWS, HACK—See Frames, Hack Saw; also Blades, Hack Saw**SAWS AND CUTTERS, Rotary***(For cutting holes in cowl boards for mounting instruments)*

Barnes & Irving, Syracuse, N. Y. "Misener." (See page 699.)

Jiffy—See Koch & Co.

Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."

Misener—See Barnes & Irving.

SCORED CYLINDERS, REPAIRING OF—

—See Cylinders, Scored, Repairing of

SCRAPERS, Bearing

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa. (See page 835.)

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Braunsdorf-Mueller Co., 305 Madison St., Elizabeth, N. J.

Buzum Tool Co., Louisiana, Mo. (See page 395.)

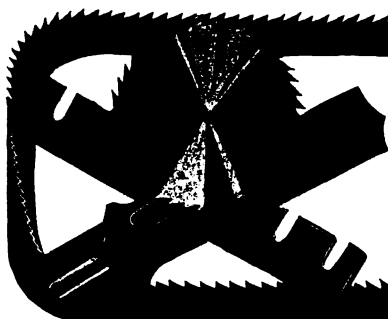
Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal. "Ideal."

Goodell-Pratt Co., Greenfield, Mass.

Harrold Tool & Forge Co.—See Wiebusch & Hilger.

Hayes File Co., 1986 Franklin St., Detroit, Mich.

Everything is listed under the NOUN or principal word



HIGH GRADE WOODWORKING MACHINE TOOLS

*Large and complete stock. Prompt
Shipments. Write for catalogue.*

WOODWORKERS TOOL WORKS
Chicago, Ill.

D. M. WATKINS & CO., 95 Pine St., Providence, R. I.

SCREW MACHINE PRODUCTS

Small Screws

Estimates given on all
your requirements. We
solicit accurate and high
grade work.

"SIX BLADES"



CRITCHLEY EXPANSION HAND REAMERS

Size	Diameter, Inches	Price, Ea.
A	15/32 expands to 17/32	\$4.50
B	17/32 expands to 19/32	4.50
C	19/32 expands to 21/32	4.75
D	21/32 expands to 23/32	4.75
E	23/32 expands to 25/32	5.00
F	25/32 expands to 27/32	5.00
G	27/32 expands to 15/16	5.50
H	15/16 expands to 1 1/16	5.80
I	1 1/16 expands to 1 3/16	7.00
J	1 3/16 expands to 1 11/32	8.00
K	1 11/32 expands to 1 17/32	10.00
L	1 17/32 expands to 1 25/32	11.50

Manufactured by

L. O. BEARD TOOL CO.,

Lancaster, Pa.

SERVICE SET No. 1

In Service Boxes as follows:

Sizes, A to H
Cutting Radius, 15/32 to 1 1/16
(Eight Complete Reamers)
Price, \$41.50

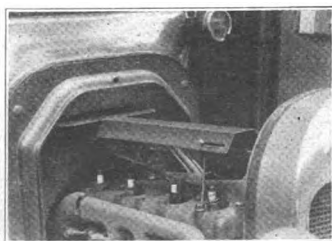
SERVICE SET No. 2

In Service Boxes as follows:
Cutting Radius, 1 1/16 to 1 25/32
Sizes, I to L
(Four Complete Reamers)

Price, \$38.00

Distributed by

LANCASTER SALES CO., Lancaster, Pa.



PRICE COMPLETE \$1.50



SPARK PLUG PROTECTOR FOR FORD CARS

Prevents coil and cylinder plugs from becoming short-circuited by water—without it water gets in through the hinge slots at the hood, or between the dashboard and hood.

The Protector is easily attached to the dashboard directly over the coil plugs and is supported at the other end by a special eye bolt.

Jobbers, Dealers.—Write today for discounts; also ask for information and descriptive literature on our Parking Lamp and other accessories manufactured by us.

HADDEN-MESSINGER CORPORATION
42 LORIMER STREET BROOKLYN, N. Y.

Please mention The Automobile Trade Directory

SCRAPERS, Bearing (Continued)

Ideal—See Gogle Hand-Forged Tool Co.
 Kraenter & Co., Newark, N. J.
 (See page 1001.)
 Mound Tool Co., Dept. D., Seventh &
 Hickory Sts., St. Louis, Mo.
 (See page 1011.)
 Osborne & Co., C. S., Newark, N. J.
 Storts & Son, John, 2010-13 Vine St., Phila-
 delphia, Pa.
 Taber Mfg. Co., 2227 Woolsey St., Berkeley,
 Cal.
 Vichek Tool Co., Cleveland, O.
 Wiebusch & Hilger, 110 Lafayette St., New
 York, N. Y. (Sole Selling Agents for Har-
 rold Tool & Forge Co., Columbiana, O.)

SCRAPERS, Carbon

Braunsdorf-Mueller Co., 205 Madison St., Eliza-
 beth, N. J.
 Buffum Tool Co., Louisiana, Mo.
 (See page 395.)
 Chapman Bros. Co., Saybrook, Conn. "Say-
 brook."
 Flexible Carbon Scraper Co., 1421 W. Wash-
 ington St., Los Angeles, Cal.
 Marcy Tool Works, Putnam, Conn.
 Maximus—See Taunton Tool Co.
 Mound Tool Co., Dept. D., Seventh &
 Hickory Sts., St. Louis, Mo.
 (See page 1011.)
 Nelson Mfg. Co., A., 2700 Southport Ave.,
 Chicago, Ill. (See page 83.)
 Osborne & Co., C. S., Newark, N. J.
 Saybrook—See Chapman Bros Co
 Taunton Tool Co., 49 Adams St., Taunton,
 Mass. "Maximus."

SCRAPERS, Foot

*(For attachment to running board for scraping dirt
 or mud from the feet before entering car; for running
 board mats—See Mats, Running Board)*

Armand Machine Works, 442-50 N. Wells
 St., Chicago, Ill. "Klean-Kar."
 (See page 371.)
 Bihler, Albert E., 2219 Howard St., Omaha,
 Neb.
 Klean-Kar—See Armand Machine Works.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis,
 Mo.
 Stanwood Equipment Co., 308 N. Michi-
 gan Blvd., Chicago, Ill. (See page 643.)

SCREENS, SUN—See Visors, Wind Shield

SCREENS, Wire Windshield

Mac Comfort Screen Co., Louisville, Ky.
 Webb Auto Screen Co., Brainerd, Minn.

SCREW CASES—See Cases, Bolt

SCREW CUTTING DIES—See Taps and
 Dies

SCREW DRIVERS—See Drivers, Screw

SCREW DRIVING MACHINES—See Ma-
 chines, Screw Driving

SCREW-EYES, Brass and Iron

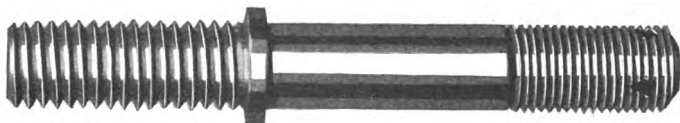
Hindley Mfg. Co., John St., Valley Falls, R. I.
 Sargent Co., Water & Wallace Sts., New
 Haven, Conn.

Wire Goods Co., 28 Union St., Worcester,
 Mass.

**SCREW MACHINE PRODUCTS TO
 ORDER**

A C R—See American Cloth Register Co.
 Acme Engineering & Mfg. Co., 355 Union
 Park Ave., Chicago, Ill.
 Acme Mfg. Co., Boonton, N. J.
 Advance Mfg. & Tool Co., 3741 E. 93rd St.,
 Cleveland, O.
 Advance Tool Works, 2300 Warren Ave., Chi-
 cago, Ill.
 Aetna Screw & Bolt Co., 104 S. Clinton St.,
 Chicago, Ill.
 Aigne Tool, Die & Machine Works, Geo. H.
 Springfield, O.
 Akins Machine Co., Wm. C., 1 Gleason Pl.,
 Rochester, N. Y.
 Akron-Salle Co., High & Chestnut Sts., Akron,
 O.
 Albaugh-Dover Co., 2100 Marshall Blvd., Chi-
 cago, Ill.
 Albrass Co., Cocksackie, N. Y.
 American Brass Novelty Co., Grand Haven,
 Mich.
 American Brass Products Co., Pottstown, Pa.
 American Cloth Register Co., 189 Main St.,
 New Britain, Conn. "A C R."
 American Die & Tool Co., Reading, Pa.
 (See page 449.)
 American Multigraph Co., Cleveland, O.
 American Steam Gauge & Valve Mfg. Co.,
 208-20 Camden St., Boston, Mass.
 Ansonia Mfg. Co., Ansonia, Conn.
 Arlington Machine Works, 668-74 Jenks St.,
 St. Paul, Minn.
 Artistic Bronze Co., 2050 Fairfield Ave.,
 Bridgeport, Conn.
 Ashley Machine Works, 724 University Ave.,
 Rochester, N. Y.
 Atlantic Mfg. Co., Milford, Conn.
 Atlas Brass Foundry Co., Columbus, O.
 (See page 603.)
 Attwood Brass Works, Grand Rapids,
 Mich. (See page 479.)
 Automatic Products Co., 1145 W. Grand
 Blvd., Detroit, Mich. (See page 823.)
 Automatic Screw Machine Products Co., 418
 W. Grand Ave., Chicago, Ill.
 Automobile Screw Products Co., 1170 E. 152nd
 St., Cleveland, O.
 B & S Mfg. Co., 891 Cypress Ave., Brooklyn,
 N. Y.
 Babson-Dow Mfg. Co., 60 Fulda St. (Roxbury),
 Boston, Mass.
 Bard Mfg. Co., Royersford, Pa.
 (See page 709.)
 Barkelew Metal Products Co., Richard &
 Bowen Sts., Dayton, O. (See page 667.)
 Barnes Co., Wallace, Bristol, Conn.
 Becco—See Michigan Motor Specialties Co.
 Bell Co., 1555 Fillmore Ave., Buffalo, N. Y.
 Belvidere Screw & Machine Co., E. Madison
 St., Belvidere, Ill.
 Bertelsmann Co., Glenn, 1109-17 Hamilton
 Ave., Indianapolis, Ind.
 Bertschy Engineering Co., 802 N. 16th St.,
 Omaha, Neb.
 Bilton Machine Tool Co., Bridgeport,
 Conn. (See page 625.)
 Blair Tool & Machine Works, 521 Greenwich
 St., New York, N. Y.
 Blake & Johnson Co., Waterbury, Conn.
 (See page 833.)
 Blount Engineering Co., 100 High St., Boston,
 Mass.

Everything is listed under the NOUN or principal word



Automatic Products Co.

1145 West Grand Boulevard

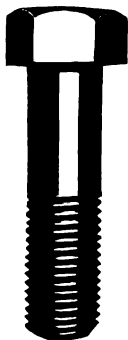
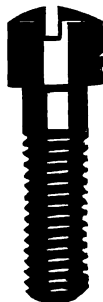
DETROIT

MICH.

Manufacturers of Screw Machine
Products for Automobiles, Trucks,
Tractors and Airplanes.

All Cap Screws milled from the
Steel Bar—capacity 400,000 daily.

Cap Screws, Conn. Rod
Bolts, Clevis Pins,
Studs, Special Parts.



Please mention The Automobile Trade Directory

SCREW MACHINE PRODUCTS TO ORDER (Continued)

- Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
- Bowen Products Corp., Auburn, N. Y. (See page 321.)
- Breslove Screw Products Co., 12-14 S. Jefferson St., Chicago, Ill.
- Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
- Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
- Brown Bag Filling Machine Co., 10 Main St., Fitchburg, Mass.
- Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
- Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.
- Bryan Screw Machine Products Co., Bryan, O.
- Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. (See page 627.)
- Campbell Mfg. Co., Slater Bldg., Worcester, Mass.
- Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 665 and 829.)
- Central Machine Works, 1911 N. 13th St., St. Louis, Mo.
- Central Machine Works, 19 Church St., Worcester, Mass. (See page 611.)
- Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 335.)
- Chadbourne-Walker Machine Screw Co., 100 Sudbury St., Boston, Mass.
- Chapman Co., Berlin, Wis.
- Chelsea Screw Co., S. Main St., Chelsea, Mich.
- Chicago Automatic Machine Co., 400-08 N. Oakley Ave., Chicago, Ill.
- Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.
- Chicago Nut Co., 3513-39 W. 20th St., Chicago, Ill.
- Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 551 and 827.)
- Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 909.)
- Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 289.)
- Cincinnati Screw Co., Twilighttee, O. (See page 945.)
- City Iron Works & Machine Co., 520 E. Delaware Ave., Philadelphia, Pa.
- Clark-Cadle-Harmon Corp., 1139 University Ave., Rochester, N. Y.
- Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
- Cleveland National Machine Co., 1866 W. 70th St., Cleveland, O.
- Cleveland Wrought Products Co., W. 58th St., South of Denison Ave., Cleveland, O. (See page 825.)
- Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.
- Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
- Colson Co., Elyria, O.
- Columbus Auto Parts Co., 215 E. Russel St., Columbus, O.
- Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
- Commonwealth Screw Co., 26 Bartlett St., Worcester, Mass.
- Conner Machine & Tool Co.—See Ryerson & Son.
- Conradson Machine Tool Co., Ninth & State Sts., Green Bay, Wis.
- Corbin Screw Corp., High St., New Britain, Conn.
- Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.
- Cummings Co., Harry, Syracuse, N. Y.
- Curtis Screw Works, 17 Gull St., Buffalo, N. Y.
- D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.
- Dallett Co., Thos. H., 1324 Federal St., Philadelphia, Pa.
- Davis Sewing Machine Co., Linden & Davis Aves., Dayton, O.
- Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.
- Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
- Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
- Diuguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.
- Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.
- Duck Co., William B., 224-26 Superior St., Toledo, O.
- E. H. Machine Co., 234 Maple St., Weehawken, N. J.
- E. C. Mfg. Co., Chicago, Ill.
- Eastern Machine Screw Corp., 30-40 Barclay St., New Haven, Conn.
- Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
- Empire Mfg. Co., 130 Emmett St., Newark, N. J.
- Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.
- Ericsson Screw Machine Products Co., 697-99 Bergen St., Brooklyn, N. Y.
- Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 231.)
- Erie Specialty Co., Erie, Pa.
- Eureka Co., North East, Pa.
- Eveready Mfg. Co., 30 Boylston St., Boston, Mass.
- Faries Mfg. Co., 634 N. Union St., Decatur, Ill.
- Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.
- Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.
- Federal Nut, Bolt & Machine Co., 1639 Collamer Ave., Cleveland, O.
- Federal Screw Works, 4725 Ellery St., Detroit, Mich.
- Fernald Mfg. Co., North East, Pa.
- Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O. (See page 825.)
- Fischer Special Mfg. Co., 2076-78 Reading Rd., Cincinnati, O.
- Fischer Spring Co., Chas., 473 Kent Ave., Brooklyn, N. Y.
- Flannery Co., P. J., 88 Whiting St., New Britain, Conn.
- Forest City Machine & Forge Co., 5101 Lake-side Ave., N. E., Cleveland, O.
- Fostoria Screw Corp., E. Railroad St., Fostoria, O.
- Framingham Screw Works, Framingham, Mass.
- Franklin Machine & Tool Co., Springfield, Mass. (See page 631.)
- Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
- Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.
- General Machine Works, Lamour & Prospect Sts., York, Pa.
- Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for E. C. Screw Machine Products.) (See page 853.)

Everything is listed under the NOUN or principal word



The Ferry Process Makes them Better



The Ferry Process of making Screw Machine Products assures a uniform quality of product, accurately machined to standard gages.

The Tensile and Ductile strength of the steel is retained by the special heat treatment given Ferry Process Screws.

Engineers are demanding heat treated products for dependability.



The Ferry Cap & Set Screw Co.
2151 Scranton Road, Cleveland, Ohio

CLEVELAND WROUGHT PRODUCTS

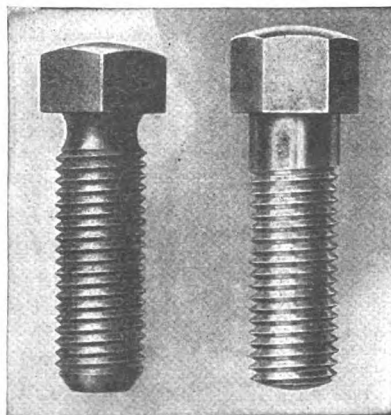
are High-Quality Products

**CAP
SCREWS**

**SET
SCREWS**

STUDS

**CLEVIS
PINS**



**CONNECTING
ROD BOLTS**

STEP BOLTS

**SPECIAL
WASHERS**

**STEEL
STAMPINGS**

The Cleveland Wrought Products Co.
West 58th Street, South of Denison, Cleveland, Ohio

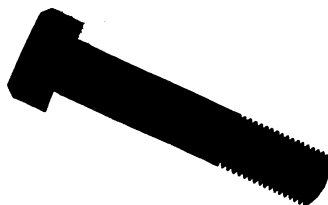
Please mention The Automobile Trade Directory

SCREW Machine Products to Order (Continued)

- Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.
- Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
- Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
- Gould-Mersereau Co., 48 W. 38th St., New York, N. Y.
- Grand Rapids Brass Co., 90 Scribner Ave. N. W., Grand Rapids, Mich.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.
- Greist Mfg. Co., New Haven, Conn. (See page 323.)
- Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.
- H. K. Metal Products Co., 60 Grand St., New York, N. Y.
- Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. (See page 821.)
- Hall Lamp Co., C. M., Detroit, Mich. (See page 485.)
- Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
- Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
- Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
- Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.
- Hanson Bros., 539-48 Southington Ave., Plainville, Conn.
- Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.
- Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
- Hartford Machine Screw Co., Hartford, Conn. (See page 820.)
- Henry Mfg. Co., G. J., 3263-70 W. Grand Ave., Chicago, Ill.
- Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
- Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.
- Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.
- Hoerner Mfg. Co., 3020 Moneta Ave., Los Angeles, Cal. (See page 1007.)
- Hub Engineering & Machine Co., Bound Brook, N. J.
- Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.
- Humason Mfg. Co., Division A, Forestville, Conn. (See page 871.)
- Hyklas—See Parts Service Co.
- Hyman & Co., Henry, 476 Broadway, New York, N. Y.
- Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
- Ideal Tool & Machine Co., 48 S. Water St., Poughkeepsie, N. Y.
- Iles Mfg. Co., E. W., Shelton, Conn.
- Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
- Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 477.)
- Inter-State Machine Products Co., Rochester, N. Y.
- K. & Z. Automatic Screw Co., Defiance, O.
- Kameco Corp., 34 Barclay St., New York, N. Y.
- Keavany & Son, W. R., 185 Bunker Hill Rd., Waterbury, Conn.
- Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
- Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
- Kihm-Bowen Machine Co., 146 Colt St., Irvington, N. J.
- Kineto Machine Co., 329 Plymouth St., Chicago, Ill.
- King Sewing Machine Co., 90 Welland St., Buffalo, N. Y.
- Klein, Adolph, 174 Centre St., New York, N. Y.
- Koehler Mfg. Co., Marlboro, Mass.
- Krahn Mfg. Co., 588 Clinton St., Milwaukee, Wis.
- Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
- Lagerholm Co., E., 9 S. Clinton St., Chicago, Ill.
- Lakewood Screw Machine Products Co., Cleveland, O.
- Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.
- Lehigh Engineering Co., Royersford, Pa.
- Levy, Benj., 355 W. Broadway, New York, N. Y.
- Lewis & Milligan, 1108 Boulevard Pl., Indianapolis, Ind.
- Liberty Screw Co., 383 Shrewsbury St., Worcester, Mass.
- Liberty Tool & Gauge Works, 333 Bernon St., Woonsocket, R. I.
- Linden & Co., Providence, R. I. (See page 827.)
- Lippincott-Carwen Corp., Erie Ave. & Richmond St., Philadelphia, Pa.
- Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.
- McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
- McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- Mann Corp., Kankakee, Ill.
- Mann Mfg. Co., 454-56 Golden Gate Ave., San Francisco, Cal.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Manufacturers Machine Products Co., 1320-68 Mt. Elliot Ave., Detroit, Mich.
- Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.
- Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
- Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.
- May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 719.)
- Mead & Cross Co., 309 Lafayette St., New York, N. Y.
- Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
- Merit Machine Mfg. Corp., 465 Greenwich St., New York, N. Y.
- Metal Industries Service Co., Cleveland, O.
- Metal Machining Tool Co., 2176 E. 76th St., Cleveland, O.
- Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
- Meyer Mfg. Co., A. J., 817-21 John St., West Hoboken, N. J.
- Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.
- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Beeco."
- Michigan Pattern & Machine Works, 2429-39 E. Jefferson Ave., Detroit, Mich.
- Michigan Screw Co., 506 S. Hooper St., Lansing, Mich.

Everything is listed under the NOUN or principal word

Set Screws
Cap Screws
Studs
Taper Pins
Semi-Fin Nuts
Castle Nuts



Special Work
Gear Blanks
Clevis Pins
Conn Rod Bolts
Spring Shackle
Bolts
Valve Lifters
Valve Rollers
Idle Studs

THE CHICAGO SCREW CO.

Est. 1872

Homan Ave. & Fillmore St.

CHICAGO, ILL.

SCREW MACHINE PRODUCTS



Our whole organization is completely up-to-date—our equipment, our methods, our manufacturing system, all are thoroughly modern. Our men are experienced and skilled specialists. Many rigid inspections and severe tests, covering every operation from the selection of the material to the last work on the finished product enable us to guarantee our products to be uniform and absolutely free from defects.

We are in a position to give prompt attention to all orders.

UP-TO-DATE MACHINE WORKS, Inc.

2915 Wabash Ave.

Chicago, Ill.



SCREW MACHINE PRODUCTS

ALWAYS WILLING AND READY TO FURNISH QUOTATIONS
QUALITY AND SERVICE TO YOUR SATISFACTION

LINDEN & COMPANY

PROVIDENCE

RHODE ISLAND

MANUFACTURERS OF ALL KINDS

INSULATED WIRES

INCLUDING

WIRING HARNESSES, HIGH AND LOW TENSION CABLES,
LIGHTING AND HORN WIRES FOR THE AUTOMOTIVE TRADE



The Whitney Blake Company

FACTORY
NEW HAVEN, CONN.

NEW YORK OFFICE
105 EAST 131st STREET

Western Electric Company

INCORPORATED
SOLE DISTRIBUTORS

Please mention The Automobile Trade Directory

SCREW Machine Products to Order (Continued)

- Miles, Franklin S., 205-07 Quarry St., Philadelphia, Pa.
- Miloholland Machine Co., W. 23rd & Belt R. R., Indianapolis, Ind.
- Milwaukee Screw Machine Products Co., Tenth St. & Cold Spring Ave., Milwaukee, Wis.
- Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.
- Modern Machine Shop, 15th & Ried Sts., Philadelphia, Pa.
- Moesta & Ruehrwein, Hulbert Bldg., Cincinnati, O.
- Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.
- Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.
- Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
- Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)
- Mueller Metals Co., Lapier Ave., Port Huron, Mich.
- Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.
- National Aesme Co., Cleveland, O. (See page 667.)
- National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
- National Lock Washer Co., 40 Hermon St., Newark, N. J.
- National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
- National Sewing Machine Co., Belvidere, Ill.
- National Steel Products Co., 2270 Franklin St., Detroit, Mich.
- Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
- Nelson Tool Co., 782 E. 142d St., New York, N. Y.
- New Britain Machine Co., Chestnut St., New Britain, Conn.
- New Haven Screw Co., 191-98 Foster St., New Haven, Conn.
- Newton Machine Screw Co., 19 Craft St., Newtonville, Mass.
- Newton Mfg. Co., Church St., Plainville, Conn.
- Niagara Brass Mfg. Co., Lockport, N. Y.
- North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
- Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo.
- Ohio Metal Products Co., Detroit, Mich.
- Olson Mfg. Co., 54 Commercial St., Worcester, Mass.
- Ontario Machine Screw Co., 8415 Rober St., Philadelphia, Pa.
- Ottomiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.
- Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.
- P. & C. Nut Co., 519 Water St., Jackson, Mich.
- Paramount Mfg. Co., Westfield, N. J.
- Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 701.)
- Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.
- Parker White-Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.
- Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
- Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hykias." (See page 147.)
- Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.
- Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
- Pennsylvania Shaftering Co., Spring City, Pa.
- Perry-Fay Mfg. Co., Cleveland St., Elyria, O.
- Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
- Philadelphia Machine Screw Works, 624-26 Race St., Philadelphia, Pa.
- Phillips, F. C., Hill St., Stoughton, Mass.
- Phoenix Mfg. Co., Loraine & Grand River Aves., Detroit, Mich. (See page 147.)
- Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
- Poorman, J. E., 1825 Bristol St., Philadelphia, Pa.
- Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.
- Precision Machine Co., 1029 Superior St., Indianapolis, Ind.
- Proviso Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.
- Racine Screw Works, 1501 Clark St., Racine, Wis.
- Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
- Recording Devices Co., 554 W. Fifth St., Dayton, O.
- Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
- Reliable Machine Co., 5320 St. Clair Ave., N. E., Cleveland, O.
- Reliance Engineering Co., Lansing, Mich.
- Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 305.)
- Rhode Island Tool Co., Providence, R. I.
- Ross Machine Co., 712-13-15 W. Seventh St., Lafayette, Ind.
- Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
- Rutter, Arthur T., 256 Broadway, New York, N. Y.
- Ryerson & Son, Joseph T., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
- S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
- S-P Mfg. Co., 872 E. 72nd St., Cleveland, O.
- St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
- Sandow Tool Co., 570-76 W. Broadway, New York, N. Y.
- Sanford Mfg. Co., F. C., 2080 Fairfield Ave., Bridgeport, Conn.
- Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
- Schaefer Mfg. Co., Pearl St., Berlin, Wis.
- Seavill Mfg. Co., Waterbury, Conn. (See page 831.)
- Scott & Fitzer Machine Co., Locust Ave., Cleveland, O.
- Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.
- Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
- Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
- Shambow Shuttle Co., Woonsocket, R. I.
- Shawmut Iron & Wire Works, 97 Tilleston St., Everett, Mass.
- Sherman-Klove Co., 4519-23 W. Harrison St., Chicago, Ill.
- Simmons Mfg. Co., 2405-11 Perkins Ave., Cleveland, O.
- Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.
- Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
- Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

Light Metal Parts for the Automobile Industry

We have the most completely equipped plant in the west for the manufacture and assembly of light metal parts of all kinds.

Our Specialties

Screw Machine Products up to 2½ inches	Stamping Small Gears
Milling	Bronze Bearings
Shaping	Bronze and Brass
Slotting	Casting, finished and unfinished.
Hardening	
Steel Treating and Grinding.	

Accurate Work

Our large equipment consisting of Brown and Sharpe Screw Machines and other up-to-date machinery operated by skilled workmen insures accurate work in every detail. Let us figure with you. Send us your blue prints. Write for booklet.

Casey-Hudson Company

361 E. Ohio St., CHICAGO

DETROIT
405 Book Building

NEW YORK
207 W. 76th Street



This Means *Quality*
and *Service* on Special

SCREW MACHINE PRODUCTS

Special Studs	Spring Bolts
Knurled Nuts	Special Nuts
Spark Plug Shells	Motor Tappets
Tie Rod Bolts	Pack Nuts
Knuckle Pins	Break Rod Pins
Knuckle Pin Bushings	Piston Pins

Quotations Furnished Promptly

Send us your blue prints. We will give you both
QUALITY and DELIVERY

The Toledo Automotive Products Company

2240 Smead Avenue Toledo, Ohio

SCREW MACHINE PRODUCTS

Back of every H. M. S. product is a reputation for exactness and reliability of 50 years' standing.

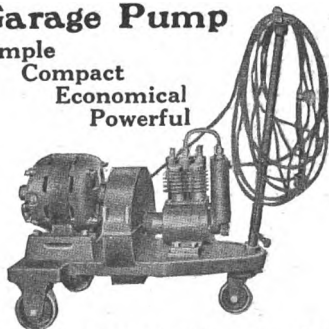


A complete line of standard set and cap screws—taper pins—S. A. E. standard screws and nuts—all milled from the bar.

MASTER

Garage Pump

Simple
Compact
Economical
Powerful



Various types to meet every tire inflation requirement. No tanks. Write for catalogue. Price \$75.00 to \$200.00.

Hartford Machine Screw Company

Hartford, Connecticut

Please mention The Automobile Trade Directory

SCREW Machine Products to Order (Continued)

Snow & Co., Albert E., 253 Broadway, New York, N. Y.
 Spacks Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.
 Specialty Products Co., 494 Mulberry St., Newark, N. J.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.
 Standard Automatic Tool Co., 1620 Racine St., Racine, Wis.
 Standard Pressed Steel Co., Philadelphia, Pa.
 Standard Screw Products Co., 2559 Bellevue Ave., Detroit, Mich.
 Standard Separator Co., Milwaukee, Wis.
 Standard Turnbuckle Co., Corry, Pa.
 Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.
 Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
 Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
 Steinen & Co., Wm., 297 Washington St., Newark, N. J.
 Stephens Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.
 Sterling Cork & Seal Co., 1612 Oakwood Ave., Toledo, O.
 Sterling Specialty Co., New Comerstown, O.
 Stiles Mfg. Co., St. Louis, Mo.
 (See page 527.)
 Superior Mfg. Co., 1109 Race St., Philadelphia, Pa.
 Thomaston Mfg. Co., Thomaston, Conn.
 Tock Screw Machine Products Corp., 199-203 Eighth St., Long Island City, N. Y.
 Toledo Automotive Products Co., 2240 Smead Ave., Toledo, O. (See page 820.)
 Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
 Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.
 Union Tool Co., 48 E. River St., Orange, Mass.
 U. S. Automatic Co., Amherst, O.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 Up-to-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. (See page 827.)
 Vahan Products Co., E. 73rd St. & St. Clair Ave., N. W., Cleveland, O.
 Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
 Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
 Vulcan Auto Parts Co., 2126-30 Race St., Philadelphia, Pa.
 Ware Bros., Automatic Products, 224 N. Ada St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Watkins & Co., D. M., 95 Pine St., Providence, R. I. (See page 821.)
 Watkins Nut Co., 2013 Franklin St., Detroit, Mich.
 Weiss, L. T., 295 Taaffe Pl., Brooklyn, N. Y.
 Wellman Products Co., 1444 E. 49th St., Cleveland, O.
 Western Automatic Machine Screw Co., Elyria, O.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 263.)
 Western Screw-Products Co., St. Louis, Mo. (See page 605.)
 Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
 White Mfg. Co., Goshen, Ind.
 Wicaco Screw & Machine Works, Stenton Ave., Philadelphia, Pa.
 Wilton Machine Tool Co., 34 Linden Park St., Boston, Mass.
 Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 715.)
 Wolverine Brass Works, 620 Monroe Ave., Grand Rapids, Mich.
 Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 627.)
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.
 York Screw Works, York, Pa.
 Ypsi Screw Co., Ypsilanti, Mich.
 Zarem & Rose, 174 Centre St., New York, N. Y.
 Zeigler Mfg. Co., 216 S. Central Ave., Alexandria, Ind.
 Zumbach Machine Repair Co., 134-36 W. 54th St., New York, N. Y.

SCREW MACHINES—See Machines, Screw

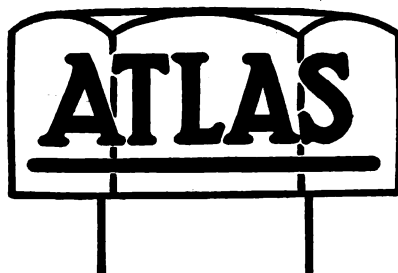
SCREW PITCH GAGES—See Gages, Screw Pitch

SCREW PLATES—See Taps and Dies

SCREWS, Cap and Set

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
 Allen Mfg. Co., 135 Sheldon St., Hartford, Conn.
 Atlas Bolt & Screw Co., Cleveland, O.
 (See page 831.)
 Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 823.)
 Barkeley Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 667.)
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.
 (See pages 551 and 827.)
 Cincinnati Screw Co., Twilight, O.
 (See page 945.)
 Clark Bros. Bolt Co., Milldale, Conn.
 Cleveland Wrought Products Co., W. 53th St., South of Denison Ave., Cleveland, O. (See page 825.)
 Columbus Bolt Works Co., Columbus, O.
 (See page 147.)
 Corbin Screw Corp., High St., New Britain, Conn.
 Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.
 Curtis Screw Works, 17 Gull St., Buffalo, N. Y.
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Empire City Screw Products Co., 12 W. 62d St., New York, N. Y. (See page 669.)
 Federal Nut, Bolt & Machine Co., 1639 Collamer Ave., Cleveland, O.
 Federal Screw Works, 4725 Ellery St., Detroit, Mich.
 Ferry Cap & Set Screw Co., 2151 Scranton Rd., Cleveland, O. (See page 825.)
 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."

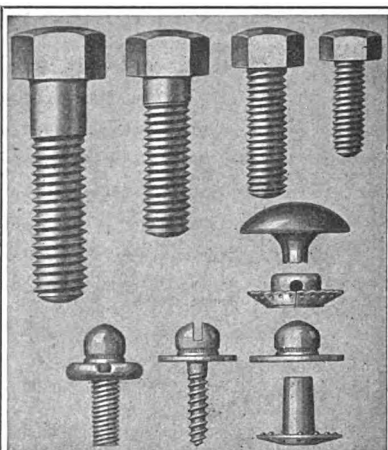
Everything is listed under the NOUN or principal word



Bolts, Nuts, Screws and Rivets

No strain or stress can be encountered in practical service that can snap an Atlas product. They are finely made, of proper dimensions and finished to give a handsome appearance.

**Heads Won't Come Off
Threads Won't Strip**



MACHINE AND CAP SCREWS

All standard sizes. Special sizes made to order in quantities.

SNAP FASTENERS

Our ACME Snap Fastener is particularly desirable for fastening automobile curtains, tops, windshields, seat covers, radiator covers, floor carpet, and door pockets. It is used and endorsed by the largest automobile manufacturers.

We make an almost unlimited variety of standard and special fasteners.

SPECIAL PARTS

Small stamped and formed parts made to order in quantities. Screw machine products.

RAW MATERIALS

Brass, Bronze, Nickel Silver, in sheets, plates, rods, wire, cups, and circles.

Our experience extends from the beginning of the automobile industry.

Scovill Mfg. Co.

Established 1802

Waterbury, Conn.

New York	Philadelphia	Boston
Rochester	Cleveland	Detroit
	Chicago	

21

Please mention The Automobile Trade Directory

SCREWS, Cap and Set (Continued)

Foster—See New Haven Screw Co.
 Fostoria Screw Corp., E. Railroad St., Fostoria, O.
 Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
 Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.
 Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
 Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
 Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
 Mac-It Parts Co., Mannheim Pike, Lancaster, Pa.
 May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 719.)
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.
 Muncie Cap & Set Screw Co., Muncie, Ind.
 National-Acme Co., Cleveland, O. (See page 667.)
 National Lock Co., Rockford, Ill.
 National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
 New Haven Screw Co., 191-93 Foster St., New Haven, Conn. "Foster."
 Ottemiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.
 Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Phoenix Mfg. Co., Lorraine and Grand River Aves., Detroit, Mich. (See page 147.)
 Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Republic Tool & Mfg. Co., 1399-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 365.)
 Rhode Island Tool Co., Providence, R. I.
 Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Seavill Mfg. Co., Waterbury, Conn. (See page 831.)
 Sherman-Klve Co., 4519-23 W. Harrison St., Chicago, Ill.
 Shlmer & Sons, Samuel J., Milton, Pa.
 Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.
 Standard Pressed Steel Co., Philadelphia, Pa. "Standco."
 Standco—See Standard Pressed Steel Co.
 Steel Products Co., Cleveland, O. (See page 145.)
 U. S. Automatic Co., Amherst, O.
 Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.
 Upson Nut Co., Unionville, Conn.
 Victor Screw Works, Detroit, Mich. (See page 737.)
 Western Automatic Machine Screw Co., Elyria, O.
 Western Screw-Products Co., St. Louis, Mo. (See page 605.)
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.
 York Screw Works, York, Pa.

SCREWS, Coach and Lag

Atlas Bolt & Screw Co., Cleveland, O. (See page 831.)

Clark Bros. Bolt Co., Milldale, Conn.
 Falls Rivet Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3556 E. 72nd St., Cleveland, O. "Perfection."
 Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Upson Nut Co., Scranton Rd., Cleveland, O.

SCREWS, LAG—See Screws, Coach and Lag**SCREWS, Machine**

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
 American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O. (See page 831.)
 Blake & Johnson Co., Waterbury, Conn. (See page 833.)
 Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 427.)
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 551 and 827.)
 Corbin Screw Corp., High St., New Britain, Conn.
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
 Hartford Machine Screw Co., Hartford, Conn. (See page 820.)
 Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.
 Keystone Screw Co., Yardley, Pa.
 Levy, Benj., 355 W. Broadway, New York, N. Y.
 Liberty Screw Co., 383 Shrewsbury St., Worcester, Mass.
 May Automatic Products Co., 14th & Howard Sts., Detroit, Mich. (See page 719.)
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 New Haven Screw Co., 191-93 Foster St., New Haven, Conn.
 Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
 Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.
 Ramsdell Specialty Co., 766 W. Boylston St., Worcester, Mass.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Seavill Mfg. Co., Waterbury, Conn. (See page 831.)
 Steele & Johnson Mfg. Co., 770 S. Main St., Waterbury, Conn.
 Waterbury Mfg. Co., 336 Grand St., Waterbury, Conn.
 Western Automatic Machine Screw Co., Elyria, O.
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

Everything is listed under the NOUN or principal word

All Sizes, Shapes and
kinds of
Machine Screws
and
Screw Machine Products
for
Automobile and Accessory
Manufacturers
Rivets Pins Studs
Threaded and
Formed Wires
The Blake & Johnson Co.
Waterbury, Conn.
Since 1849

Please mention The Automobile Trade Directory

SCREWS, SET—See Screws, Cap and Set

SCREWS, Thumb

Atlas Bolt & Screw Co., Cleveland, O.
(See page 831.)
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.
(See pages 551 and 827.)
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.
Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
Western Automatic Machine Screw Co., Elyria, O.
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

SCREWS, Wood

Aetna Screw & Bolt Co., 104 S. Clinton St., Chicago, Ill.
American Screw Co., 21 Stevens St., Providence, R. I.
Atlantic Screw Works, Charter Oak Ave., Hartford, Conn.
Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 427.)
Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
Corbin Screw Corp., High St., New Britain, Conn.
Eagle Lock Co., 105 Chambers St., New York, N. Y.
Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.
National Lock Co., Rockford, Ill.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Russell & Erwin Mfg. Co., New Britain, Conn.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Wire Goods Co., 28 Union St., Worcester, Mass.

SEALING COMPOUNDS—See Compounds, Puncture Sealing

SEALS, Motor Heat

Hammond, Laurens, 2170 E. Jefferson Ave., Detroit, Mich.

SEARCHLIGHTS, ACETYLENE — See Lamps, Acetylene; also Headlights, Tractor Acetylene

SEARCHLIGHTS, ELECTRIC — See Headlights, Electric; also Lights, Spot

SEARCHLIGHTS, SWIVEL ELECTRIC—See Lights, Spot

SEAT BACKS—See Backs, Metal Seat; also Bendings, Wood

SEAT BENDINGS—See Bendings, Wood

SEAT COVERS—See Covers, Slip

SEAT CUSHIONS—See Cushions, Seat

SEATING MACHINES—See Machines, Valve Seating and Grinding

SEATS and Attachments, Motorcycle Tandem

A-K—See Angsten-Kox Co.
Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (See page 537.)
Cabinet Spring Seat Co., 175 Market St., Paterson, N. J.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
F-N—See Fentress-Newton Mfg. Co.
Fentress-Newton Mfg. Co., 1011-19 W. Lafayette Blvd., Detroit, Mich. "F-N."

SEATS, Supplementary

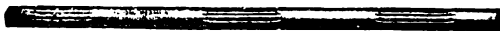
(Auxiliary or Supplementary Seats including folding chairs and stools)

American Auto Top Companies, 2 Hudson St., New York, N. Y. "Victor."
Amesbury Brass & Foundry Co., Amesbury, Mass.
Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Defiance Welding Co., Defiance, O. "Boko.")
Boko—See Bailey-Drake Co.
Buffington & Co., C. A., Berkshire, N. Y.
Defiance Welding Co.—See Bailey-Drake Co.
Empire Gear & Top Co., 207 N. 12d St., Philadelphia, Pa.
Handy-Pandy—See Pandolfo Mfg. Co.
Hill Mfg. Co., 25-27 Fuller St., Buffalo, N. Y.
Hodge & Graves Co., Amesbury, Mass. "Luxury."
Ideal—See Metal Stamping Co.
Ideal—See Wilder Mfg. Co.
Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
Imperini Bit & Snap Co., Racine, Wis. (See page 325.)
Jitney—See Metal Stamping Co.
Locke Auto Supply Co., 15116 Detroit Ave., Cleveland, O. (Sole Distributors for Neff Co., Cleveland, O.)
Luxury—See Hodge & Graves Co.
McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Ideal," "Peerless," "Jitney."
Neff Co.—See Locke Auto Supply Co.
Pandolfo Mfg. Co., St. Cloud, Minn. "Handy-Pandy."
Peerless—See Metal Stamping Co.
Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.
Victor—See American Auto Top Companies.
Victor Steel Stamping Co., 3102 Downing St., Denver, Colo.
Wilder Mfg. Co., 211-15 Pacific St., Brooklyn, N. Y. "Ideal."

Everything is listed under the NOUN or principal word

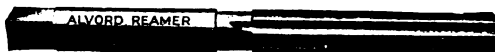


ALVORD TOOLS



Crankshaft Reamer with Pilot

This Reamer, furnished in straight or spiral flutes, with or without pilot, is designed to ream the three bearings of the Ford Crankshaft in one operation. The tool may also be used for reaming the connecting rod bearings, which are the same diameter as the main bearings. This is accomplished by simply fitting the Reamer in the jaws of a vise. Every garage and repair shop should have this useful tool.



Straight Flutes

This Reamer is made of high grade steel carefully selected for severe service and keen cutting qualities; held to close limits of tolerance.



No. 3622 1/2 SP—Spiral Flutes with Pilot



No. 3622 1/2 P—Expansion Type with Pilot

In the solid type, these Reamers are furnished with straight or spiral flutes, with or without pilot. They are also furnished in the expansion type with pilot. Both bushings for the Wrist Pin are reamed at one operation, insuring perfect alignment.



125 A—Adjustable Reamer

"Alvord" quickly adjustable non-chattering Reamer. Six semi-high speed steel blades; accurate workmanship, and properly ground. Sizes furnished from 13/32" to 1 1/4".



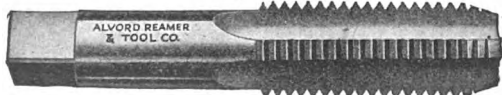
2713-2714—Spiral Flutes

These Reamers are for the spindle body and the spindle arm bushing of the Ford car. Furnished in straight or spiral flutes, with or without pilot.



3658BP—Push Rod Reamer (Oversize) with Pilot

This Reamer is used to ream the Push Rod Guides to take Push Rods 1/64" oversize. The pilot is long enough to engage the valve stem guide before the reaming portion enters the Push Rod guide, insuring perfect alignment.



Hand Taps

These tools are very essential in every shop and "Alvord" Taps are furnished in any pitch or style of thread. Every tool is accurate in diameter and lead. Absolute dependability assured.



Taper Shaft Twist Drill

Straight Shank or Taper Shank, made of Carbon or High Speed Steel will be furnished in any size. Order from your jobber and specify "Alvord."

Tools furnished promptly for all makes of cars and trucks, also Reamer Sets for repairing Ford parts; Screw Plate Sets; Adjustable Cylinder Reamers for any make of car or truck. Our Engineering Department is at your service.

Send for our Automobile Tool Catalog 5A

Alvord Reamer and Tool Company

Millersburg, Penn., U.S.A.

BRANCH OFFICES:

New York City.....59 Fourth Avenue at Astor Place
Philadelphia.....26 North Fifth Street
Chicago, Ill.....546 West Washington Boulevard

Louisville.....321 Boston Building
San Francisco, California.....693 Mission Street
Havana, Cuba.....446A Manzana De Gomez Building

Please mention The Automobile Trade Directory

SEATS, Supplementary, for Fords*(For attaching to inside of tannoon doors)*

McKinnon Dash Co., 252 Amherst St., Buffalo, N. Y.

SEATS, Tractor

Adjustable Spring Seat Co., Society for Savings Bldg., Cleveland, Ohio.

Sykes Metal Lath & Roofing Co., Niles, O.

SEATS, Special Truck

Flexo Sales Co., 394 Clinton St., Milwaukee, Wis.

SECONDARY WIRE—See Wire, Insulated**SEAR LIGHTERS**—See Lighters, Electric Cigar**SELF-FLUXING SOLDER** — See Flux, Soldering; also Solder, Bar and Wire**SELF-HARDENING CUTTING STEEL** — See Steel, Self-Hardening Cutting**SEMAPHORES**—See Signals, Direction Indicating or Traffic**SENSITIVE DRILLS**—See Drilling Machines, Sensitive**SEPARATING TOOLS**—See Tools, Spring Leaf Separating**SEPARATORS, BATTERY** — See Separators, Storage Battery**SEPARATORS, Bow***(See also Holders, Top)*

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anchor—See North & Judd Mfg. Co.

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Pennsylvania Rubber Co. of America, Jeanette, Pa.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

SEPARATORS, GASOLINE—See Strainers, Gasoline**SEPARATORS, Oil**

Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.

SEPARATORS, Storage Battery*(Wood and Composition Separators; for Rubber Separators—See Rubber, Hard)*

American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O. (Jobbers.) (See page 295.)

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 101.)

Benson Electric Co., 704 Southwest Blvd., Kansas City, Mo.

Darling Co., Len H., Addison, Mich.

Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.

Heath Mfg. Co., Greenville, Mich. (See page 363.)

Smith Co., Harrison, Oklahoma City, Okla.

Stewart Estate, William E., 14th & Elm Sts., Flint, Mich.

SERVICE STATIONS—See Stations, Electric Service**SET SCREWS**—See Screws, Cap**SETS, Rivet**

Braunsdorf-Mueller Co., Elizabeth, N. J.

Carver Tool Works, Spring Valley, N. Y.

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.

Kraemer & Co., Newark, N. J. (See page 1001.)

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1170.)

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

SETS, Wiring, for Fords*(Complete ignition wiring cut to lengths and fitted with necessary terminals)*

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. (See page 249.)

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 295.)

Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 243.)

Fawco—See Faw Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. (See page 407.)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)

Grossman Auto Parts Co., White Plains, N. Y.

Koontz Mfg. Co., 1309 S. Oakley Ave., Chicago, Ill.

McCarthy Bros. & Wilson, 2220 Wilson St., Philadelphia, Pa. (Dealers.) (See page 613.)

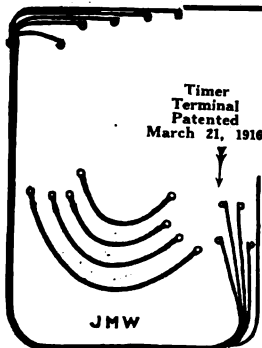
Midway Mechanical Co., St. Paul, Minn.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

White, J. M., 1116-22 Olive St., Philadelphia, Pa. (See page 837.)

Everything is listed under the NOUN or principal word



Braided Ignition and Lighting Wire Assemblies.
Primary and Secondary Cables.
Starting Cables and Lamp Cords.
Terminals for all Uses.

AUTOMOBILE MANUFACTURERS

Let us quote you on your wiring needs. We have the facilities to manufacture ignition and lighting leads, any length, one conductor with terminals attached or numerous conductors incorporated in one single braid, to your specifications.

Automobile cables and wires of all description, complete wiring assemblies, spark plug wires and starter cable leads.

J. M. WHITE

1116-18-20 Olive Street

Philadelphia, Pa.

Hansen & Olson Co.

506 South Green Street
Chicago Illinois

Brass, Aluminum, Copper
and Bronze

CASTINGS



Manufacturers of

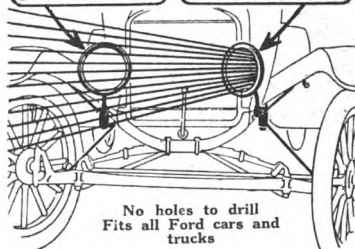
Tip Top Radiator Caps

Write for Quotations

Howes' Automatic Headlight Regulator for Fords

When turning corners, turning into garage at night or turning to avoid another car, one headlight shows road ahead, the other automatically turns in direction wheels are turned.

LAMP ON INSIDE OF TURN REMAINS STRAIGHT AHEAD
OUTSIDE LAMP TURNS TO LIGHT INSIDE OF TURN BEING MADE



No holes to drill
Fits all Ford cars and trucks

List Price Complete \$10.00
Dealers Write for Discounts

THE HOWES AUTOMATIC HEADLIGHT CO., Inc.
2721 South Michigan Avenue
CHICAGO ILLINOIS

Factory, Dowagiac, Michigan

Don't Miss The Opportunity

Mr. Manufacturer, to have ALL your products listed in The Automobile Trade Directory under their proper heads

Always carry us on your mailing list, always make certain that we receive a copy of your catalog every time a new edition is printed.

Because every day in the year and innumerable times a day The Automobile Trade Directory is consulted by thousands of buyers who rely on this one source of information and use this one Directory to guide them to their shopping places.

You serve your own interests if you see to it that a copy of every catalog reaches our files as soon as it is ready for distribution.

243 W. 39th Street **The Automobile Trade Directory New York City**

Please mention The Automobile Trade Directory

SHACKLE BOLTS — See Bolts, Spring Shackle

SHACKLE LUBRICATORS—See Lubricators, Spring and Shackle Bolt

SHADES, HEADLIGHT—See Dimmers, Headlight

SHADES, SUN—See Visors, Wind Shield

SHAFT COUPLINGS—See Couplings

SHAFT HOUSING BRACES FOR FORDS
—See Braces, Drive Shaft Housing

SHAFT LOGS, MOTOR BOAT—See Logs, Motor Boat Shaft

SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

SHAFTING, Flexible

(For driving Speedometers, Odometers or Tachometers)

Breeze Mfg. Co., 255 South St., Newark, N. J.
Coates Clipper Mfg. Co., 337 Chandler St., Worcester, Mass.

Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.

Ogden Mfg. Co., Plymouth, Ind.

Saco—See Speedometer Accessories.

Speedometer Accessories, Plymouth, Ind. "Saco."

Stow Flexible Shaft Co., 26th & Callowhill Sts., Philadelphia, Pa.

Stow Mfg. Co., 443 State St., Binghamton, N. Y.

Webb Mfg. Co., 245-47 N. J. R. R. Ave., Newark, N. J. (See page 839.)

White Dental Mfg. Co., S. S., 7 Union Sq. W., New York, N. Y. (See page 839.)

SHAFTS, CAM—See Camshafts, Finished

SHAFTS, CLUTCH—See Shafts, Transmission

SHAFTS, CRANK—See Crankshafts, Finished

SHAFTS, FLEXIBLE—See Shafting, Flexible

SHAFTS, Propeller

(Complete Propeller Shaft assemblies to blue print or specification; for Universal Joints only—See Joints, Universal)

Arvac Mfg. Co., Anderson, Ind. (See page 551.)

Baker Gun & Forging Co., Batavia, N. Y. (See page 605.)

Bender Mfg. Co., 539 W. Front St., Plainfield, N. J.

Blood-Brothers Machine Co., Allegan, Mich. (See page 551.)

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y., "Tobin"

Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 839.)

Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

K-B—See Hartford Automotive Parts Co.

Pick Co., Carl, West Bend, Wis. (See page 497.)

R-S Mfg. Co., Dayton, O. "Reim."

Ream—See R-S Mfg. Co.

Salisbury Axle Co., Jamestown, N. Y. (See page 1078.)

Snead & Co., Jersey City, N. J. (See page 379.)

Spicer Mfg. Corp., South Plainfield, N. J. (See page 549.)

Tobin—See Columbian Bronze Corp.

Universal Machine Co., Bowling Green, O.

SHAFTS, PROPELLER TRACTOR — See Shafts, Tractor Propeller

SHAFTS, PUMP—See Shafts, Transmission

SHAFTS, Rear Axle

Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 87.)

Automotive Gear Works, Atlanta, Ga. (See page 463.)

Bauer Machine Co.—See Eckhouse & Co.

Butler-Edwards Electric Co., Easton, Pa.

Claypool Machinery Works—See Jonas C. N. & F. W.

Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 463.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bauer Machine Co., Jeffersonville, Ind.)

Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 839.)

Gibbes Machinery Co., Wheat & Assembly Sts., Columbia, S. C.

Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Claypool Machinery Works, Claypool, Ind.) (See page 346.)

Lyon Co., Edward F., 1600-34 E. Euclid Ave., Detroit, Mich.

Marx Machine Tool Co., 2222 Myrtle St., Detroit, Mich.

Repco—See Replacement Parts Co.

Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. (See page 607.)

Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.

Spencer Metal Products Co., Spencer, O. (See page 508.)

Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.

U. S. Manufacturers Sales Corp., 2210-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)

Wayne Tool Co., 642 Catherine St., Detroit, Mich.

SHAFTS, Rear Axle, for Fords

Advance Tool Co.—See Gray Andrews Corp.
Allied Steel Products Co., 7 Walnut St., Aurora, Ill.

Anglers, 500 N. Vermillion St., Streator, Ill.

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)

Everything is listed under the NOUN or principal word

"The Better Shaft"



Triangle Brand Axle Shafts

Made for the past five years from better material
—workmanship unexcelled.

Carried in stock for immediate shipment to fit more
than twelve hundred models of cars.

Your jobber can supply them.

MADE BY



W. D. FOREMAN 16th & Prairie, Chicago.



WEBB FLEXIBLE SHAFTS

(Pat. May 12, 1908)

**MAY BE IMITATED, BUT
NEVER EXCELLED**

Because their service and durability are superior for Indicating and
Recording Instruments and Mechanical Devices of all description.

WE ALSO MAKE

BUFFING, DRILLING AND GRINDING OUTFITS AND WIRE BELTS

Catalogue on Request

WEBB MANUFACTURING CO., 245-247 N. J. R. R. Ave., Newark, N. J.

S. S. WHITE FLEXIBLE SHAFTS

STEEL WIRE

For Speedometers, Engine Governor, Valve Control and wherever
Power is to be transmitted in curves and around obstacles.

Unequaled in Forty Years

SILENT—STEADY—SERVICEABLE

THE S. S. WHITE DENTAL MFG. CO.
Flexible Shaft Department

7 Union Square, West, New York, N. Y.

Correspondence Solicited

Please mention The Automobile Trade Directory

SHAFTS, Rear Axle, for Fords (Continued)

Asch and Co., Inc., 16-24 W. 51st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Shafts.)
(See page 243.)

Bauer Machine Co.—See Eckhouse & Co.

Bridgers Co., J. D., Palmetto St. & Railroad Ave., Florence, S. C.

Butler-Edwards Electric Co., Easton, Pa.

Dunham Co., Thos., Aurora, Ill.
(See page 163.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bauer Machine Co., Jeffersonville, O.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 839.)

Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.)
(See page 251.)

Gibbes Machinery Co., Wheat & Assembly Sts., Columbia, S. C.

Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Advance Tool Co., Cincinnati, O.)

Grossman Auto Parts Co., White Plains, N. Y.

Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill.

Lake Erie Metal Products Co., 1838 Central Ave., Cleveland, O.

Marx Machine Tool Co., 2222 Myrtle St., Detroit, Mich.

Niagara Motors Corp., Dunkirk, N. Y.
(See page 693.)

Repco—See Replacement Parts Co.

Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. "Repco."
(See page 697.)

Sallishury Axle Co., Jamestown, N. Y.
(See page 1078.)

Service Gear & Machine Co., Second & But-
tonwood Sts., Reading, Pa.

Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

Spencer Metal Products Co., Spencer, O.
(See page 508.)

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)

SHAFTS, Tractor Propeller

Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."

K-B—See Hartford Automotive Parts Co.

SHAFTS, Transmission, Clutch and Pump

Marx Machine Tool Co., 2222 Myrtle Ave., Detroit, Mich.

Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.

SHAPERS, AIRCRAFT PROPELLER BLADE—See Machines, Aircraft Propeller Blade Shaping

SHAPERS, Metal

American Tool Works Co., Pearl St. & Eg-
gleston Ave., Cincinnati, O.

Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb.

Boynnton & Plummer, Chester Depot, Vt.
Cincinnati Shaper Co., Eiam St. & Garrard
Ave., Cincinnati, O.

Cochrane-Bly Co., 15 St. James Pl., Rochester,
N. Y.

Davis Machine Tool Co., 307 St. Paul St.,
Rochester, N. Y.

Gould & Eberhardt, Colt & Chancellor Aves.,
Irrington, N. J.

Hendey Machine Co., 105 Summer St., Tor-
rington, Conn.

Juengst & Sons, Geo., Croton Falls, N. Y.

Kelly Co., R. A., W. Main St., Xenia, O.

Milwaukee Shaper Co., 1029 Coldspring Ave.,
Milwaukee, Wis.

Niles-Bement-Pond Co., 111 Broadway, New
York, N. Y.

O & S—See Osborne & Sexton Machinery Co.

Ohio Machine Tool Co., Kenton, O.

Osborne & Sexton Machinery Co., Fourth &
Russell Sts., Columbus, O. "O & S."

Potter & Johnston Machine Co., 1035 New-
port Ave., Pawtucket, R. I.

Queen City Machine Tool Co., 1405 Sycamore
St., Cincinnati, O.

R. M. Co.—See Rhodes Mfg. Co.

Rhodes Mfg. Co., 948 Park St., Hartford,
Conn. "R. M. Co."

Rockford Machine Tool Co., 2400 Kiskadee
St., Rockford, Ill.

Smith & Mills Co., 2889-91 Spring Grove Ave.,
Cincinnati, O.

Stapf & Co., John B., Dunkirk, N. Y.

Stamco—See Streine Tool & Mfg. Co.

Steptoe Co., John, 2961 Colerain Ave., Cincin-
nati, O.

Stockbridge Machine Co., 68 Abbott St., Wor-
cester, Mass.

Streine Tool & Mfg. Co., New Bremen, O.
"Stamco."

Whipp Machine Tool Co., Sidney, O.

SHAPERS, Wood

Advance Machinery Co., Van Wert, O.

American Wood Working Machinery Co., 591
Lyell Ave., Rochester, N. Y.

Barker & Co., Wm., Pleasant & Wheeler Sts.,
Covington, Ky.

Bentel & Margedant Co., Hamilton, O.

Cordesman, Meyer & Co., 53-57 Central Ave.,
Cincinnati, O.

Cordesman-Rechtin Co., 215 Butler St., Cin-
cinnati, O.

Crescent Machine Co., Leontia, O.

Defiance Machine Works, 434 Perry St., De-
fiance, O.

Fay & Egan Co., J. A., 415 W. Front St., Cin-
cinnati, O.

Hall & Brown Woodworking Machine Co.,
Broadway & Ninth St., St. Louis, Mo.

Jones Superior Machine Co., 1255-72 W. North
Ave., Chicago, Ill.

Oliver Machinery Co., 1025 Clancy St., N. E.,
Grand Rapids, Mich.

Porter Machinery Co., C. O., 666 Front Ave.,
Grand Rapids, Mich.

Power & Co., L., 20 S. 23d St., Philadelphia,
Pa.

Prybitt Machine Co., P., 512-24 W. 41st St.,
New York, N. Y.

Smith Machine Co., H. B., Smithville, N. J.

Whitney & Son, Baxter D., Wincendon,
Mass. (See pages 467 and 541.)

Everything is listed under the NOUN or principal word

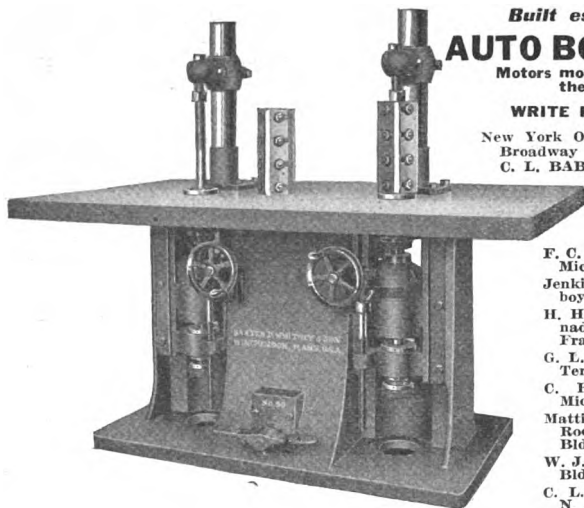
A MOTOR DRIVEN SHAPER

Built especially for
AUTO BODY WORK

Motors mounted directly on
 the Spindles

WRITE FOR BOOKLET

New York Office: Times Bldg.,
 Broadway at 42nd Street,
 C. L. BABCOCK, Manager.



SELLING AGENTS

F. C. Cherry, Grand Rapids,
 Michigan.
 Jenkins Machine Co., She-
 boygan, Wis.
 H. H. Plummer & Co., Mo-
 nadnock Building, San
 Francisco, Cal.
 G. L. Parker, 78 Lancaster
 Terrace, Brookline, Mass.
 C. H. Murdock, Detroit,
 Michigan.
 Mattison Machine Works,
 Rockford, Ill.; Republic
 Bldg., Chicago, Ill.
 W. J. Glor, 405 Hippodrome
 Bldg., Cleveland, Ohio.
 C. L. Frennell, Greensboro,
 N. C.

BAXTER D. WHITNEY & SON, Inc., Winchendon, Mass.

ANNOUNCEMENT!

Our line of STANDARD motor equipment, consisting of electrical replacement parts, coils, cutouts, breakers, bakelite, dash lamps, cable, platinum, etc., is without question, superior in quality and workmanship to any on the market.

Quality, service and fair dealing is as essential to the success of our business as well as yours; with this in view, we are convinced that in soliciting your business, we can give you that co-operation which is so necessary in order to assure you of a substantial profit in the sale of our products.

Jobbers—Dealers

Write today for Descriptive Literature
 and Discounts to the Trade

Yours very truly,

J. A. SIMEK & CO.

SALES DEPARTMENT
 15-21 Park Row, New York

Courtesy Service and Sales Co.

Authorized Factory Representatives
 for the following quality products:

**4-Wheel Hydraulic
 Automobile Brakes**

**Eiseman Foreign
 Magneto**

Columbia Carburetor

**Houdaille
 Shock Absorbers**

Installations and Service

1302 S. WABASH AVENUE

Telephone Calumet 2570

CHICAGO ILLINOIS

Please mention The Automobile Trade Directory

SHEARS, Rotary

Grays—See Southwark Foundry & Machine Co.
Quickwork Co., Celina Rd., St. Marys, O.
Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa. "Grays."
Yoder Co., Walworth Ave. & 55th St., Cleveland, O.

SHEAVES AND PULLEYS

(For Horn and Out-out Cables)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 203.)

SHEET ALUMINUM—See Aluminum**SHEET ASBESTOS**—See Asbestos**SHEET BRASS**—See Brass, Sheet**SHEET CELLULOID**—See Celluloid, Sheet**SHEET COPPER**—See Brass and Copper, Sheet**SHEET FELT**—See Felt, Sheet**SHEET FIBRE**—See Fibre, Hard**SHEET METAL TESTING INSTRUMENTS**
—See Instruments, Metal Testing**SHEET PACKING**—See Packing**SHEET RUBBER**—See Rubber, Hard**SHEET STEEL**—See Steel**SHELLAC**—See Cement, Gasket**SHELLS, BOILER**—See Shells, Copper**SHELLS, Copper Boiler**

Randolph-Clowes Co., 384 Bark St., Waterbury, Conn.

SHELLS, Muffler for Fords

Expando—See Hudson Motor Specialties Co.
Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Expando."

SHELVING, METAL—See Racks, Metal Tool**SHERARDIZING**—See Galvanizing**SHIELD STRIPS**—See Strips, Wind Shield Weather**SHIELDS, Aeroplane**

Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O.

SHIELDS, Auxiliary Wind

Accessory Supply Co., 1218-20 E. 12th St., Kansas City, Mo. "Asco."

Apex—See Taylor-Southard Co.**Asco**—See Accessory Supply Co.**Automotive Accessories**—See Fulton Co.

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Wind-A-Way."

Bardeen Motor Sales Co., 312 E. 17th St., Kansas City, Mo.

Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.) (See page 1003.)

Benzer Corp., Myrtle, Webster & Cooper Ave., Brooklyn, N. Y. (See page 317.)

D-Flekt-O—See Schonberg Mfg. Co.

Denver Wing Co., 2131 S. Michigan Ave., Chicago, Ill. "Duplex."

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.

Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.

Duplex—See Denver Wing Co.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Ennesco—See Northwestern Mirror & Specialty Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Automotive Accessories, Kokomo, Ind. "Sher-Loc.") (See page 1018.)

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Weston."

H. I.—See Hartman & Inman.

Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash. "Ideal."

Hartford—See Sirwell Mfg. Co.

Hartman & Inman, 157 W. 51st St., New York, N. Y. "H. I." (See page 843.)

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

Ideal—See Hardware Mfg. Co.

Johnston Mfg. Co., William R., 451-469 E. Ohio St., Chicago, Ill. (See page 653.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal.) (See page 345.)

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

Kozy—See Thomas-Bray Co.

Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Masco—See Mayer Auto Accessories Corp.

Mayer Auto Accessories Corp., 452-54 Ellicott Sq., Buffalo, N. Y. "Masco."

Mitchell Automotive Co., 157 Christopher St., New York, N. Y. (See page 1051.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Pacific Windshield Co., 814 S. Olive St., Los Angeles, Cal.

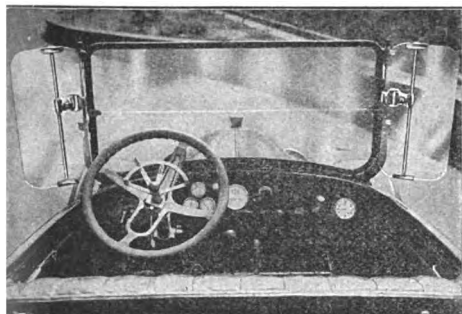
Perfection Co., 400 W. Ohio St., Chicago, Ill. "Adjunto." (See page 1005.)

Perfection Windshield Co., Indianapolis, Ind.
Pitts Auto Equipment Co., 84 E. Tenth St., New York, N. Y.

Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.

Ross & Co., A. M., Temple Theatre Bldg., Illon, N. Y. "Utility."

Everything is listed under the NOUN or principal word



H. I. Wind Deflectors

Made to fit all cars. Adds to the joy of motoring. A protection against wind, dust and rain. Deflectors can be attached to windshield in few seconds. Adjustable wing nut enables car owner to set them at any angle. In hot weather, by reversing position of wind deflectors, more air is caused to circulate into the car.

Write for terms to the trade.

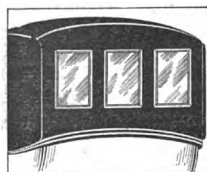
Hartman & Inman, Inc.
157 W. 51st St. New York

ERO PRODUCTS

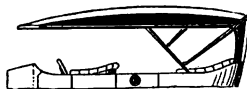


"Ero"
Bucket Seats

A Few Items from Our Complete
Line of Metal and Fabric
AUTOMOTIVE EQUIPMENT



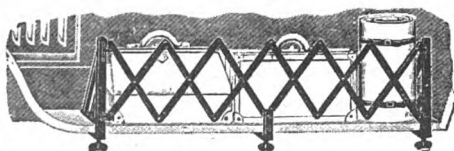
"Ero" Aristocrat
Glass Curtain Window



De Luxe One-man Top for Fords



Back Cushion



"Ero"
Tire Covers

Jobbers and Dealers: Write for Complete Catalog and Prices

Factory
753-755 W. Jackson Blvd.
Chicago, Ill.

ERO MANUFACTURING CO.

Eastern and Export Sales Dept
1778 Broadway
New York City

DIAMOND DETROIT BRAND

**SOLDERING
COPPERS**



Diamond Detroit Brand Soldering coppers are high grade tools, hand forged from pure copper bars. The handles are clinched right into the heat unit and will never come off.

Latest price list with illustrations of the different shaped soldering coppers we make will be gladly sent on request.

MOTOR PRODUCTS CORPORATION

11803 Mack Ave., Detroit, Michigan

Please mention The Automobile Trade Directory

SHIELDS, Auxiliary Wind (Continued)

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Schonberg Mfg. Co., 728 W. Madison St., Chicago, Ill. "D-Flect-O." (See page 845.)
 Se-Clear—See Zenith Products Co.
 Sewell Mfg. Co., W. B., 1120 Broadway, Denver, Colo.
 Shurelock—See Fulton Co.
 Sirwell Mfg. Co., G. R., 1616-18 Holmes St., Kansas City, Mo. "Hartford."
 Standard Corp., Outlook Bldg., Columbus, O.
 Star Wing Co., 170 W. Randolph St., Chicago, Ill. (See page 845.)
 Taylor-Southard Co., 306 Wells St., Milwaukee, Wis. "Apex."
 Thomas-Andrews Corp., Waukegan, Ill. (See page 951.)
 Thomas-Bray Co., Provident Bk. Bldg., Cincinnati, O. "Kozy."
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 339.)
 Tribune Engineering Co., Front St., Owego, N. Y.
 Utility—See Ross & Co.
 W. B.—See Wildenberg Bros.
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn. "Wind-Y-Flect."
 Weston—See Gaffey-Weston Mfg. Co.
 Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."
 Wind-A-Way—See Automotive Supply Mfg. Co.
 Wind-Y-Flect—See Western Windshield Works.
 Zenith Products Co., Spring Lake, Mich. "Se Clear."

SHIELDS, FOOT PEDAL, FOR FORDS—See Deflectors, Heat, for Fords**SHIELDS, Motorcycle Knee**

Helms Motor Co., 611 W. North Ave., Baltimore, Md.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

SHIELDS, Motorcycle Wind

G M C—See General Motorcycle Windshield Corp.
 General Motorcycle Windshield Corp., 32 William St., Newark, N. J. "G M C."
 Helms Motor Co., 611 W. North Ave., Baltimore, Md. "H. M. C."
 H. M. C.—See Helms Motor Co.
 Shillan, Beck & Co., 68 E. 131st St., New York, N. Y.

SHIELDS, RAIN—See Visors, Top; also Visors, Wind Shield**SHIELDS, SPARK PLUG POINT—See Protectors, Spark Plug Point****SHIELDS, SUN—See Visors, Wind Shield****SHIELDS, Tonneau**

(Special adjustable shields for the protection of rear seat passengers in open cars)

Auster—See Fleetwood Metal Body Co.
 Beatson—See Sharrer Patent Top Co.
 Bentel—See Thompson Co.
 Clark & Son, A. N., Broad St., Plainville, Conn.

Fleetwood Metal Body Co., Fleetwood, Pa. "Auster."
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Tonn-O." (See pages 172 and 173.)
 Hartford—See Sirwell Mfg. Co.
 Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
 J. H.—See Tonneau Shield Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal.) (See page 345.)
 Perfection-Hartford—See Perfection Windshield Co.
 Perfection Windshield Co., Indianapolis, Ind. "Perfection-Hartford."
 Perkins Tonneau Windshield Co., 1931 Broadway, New York, N. Y.
 Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.
 Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (Importers.) "Beatson." (See page 709.)
 Sirwell Mfg. Co., G. R., 1616-18 Holmes St., Kansas City, Mo. "Hartford."
 Sterling Top & Equipment Co., 518 E. W. 57th St., New York, N. Y.
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. "Bentel." (See page 339.)
 Tonneau Shield Co., 47-49 W. 33rd St., New York, N. Y. "J. H." (See page 845.)
 Tonn-O—See Gemco Mfg. Co.

SHIELDS, TOP—See Visors, Top**SHIELDS, TRUCK RADIATOR—See Fenders and Guards, Truck Radiator****SHIELDS, Wind**

Ackerman—See Smith & Co.
 Ainsworth Mfg. Co., 256 Dubois St., Detroit, Mich.
 Alexander Mfg. Co., J., 1991 Broadway, New York, N. Y.
 Auto Wind Shield Co., University Rd., Cambridge, Mass.
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Banker Wind Shield Co., Ellsworth & Negley Aves., Pittsburgh, Pa.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 171.)
 Detroit Auto Visor Co., 302-06 Woodbridge St., E., Detroit, Mich.
 Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.
 Empire Gear & Top Co., 207 N. 22d St., Philadelphia, Pa.
 English & Merrick Co., New Haven, Conn. (See page 571.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Hartford Windshield Mfg. Co., 1004 E. Los Angeles St., Los Angeles, Cal.
 Johnston Commercial Body Co., Fort Smith, Ark.
 Jonah & George, Little's Ct., Merrimac, Mass.
 Monarch Auto Accessory Mfg. Co., 78 Main St., Buffalo, N. Y.
 Moore Co., W. J., Montague Ave. & Joy St., Caro, Mich.
 Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 843.)
 Murray & Co., P. A., Newton, Mass.
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Everything is listed under the NOUN or principal word

D-FLEKT-O—*the Correct Side Shield*

Invites Cool Breezes—Sidetracks Cold Winds

GIVES motoring comfort and style in any weather.

Instantly adjusted to any position—double-tiltable—clear vision—no bars across the glass—no holes in glass—glass held firmly in perfect balance.

Supply houses and garages everywhere are making a quick turn-over on D-FLEKT-Os. Write today for details of our special sales co-operative plan.

SCHONBERG Manufacturing Co.
728 West Madison Street Chicago

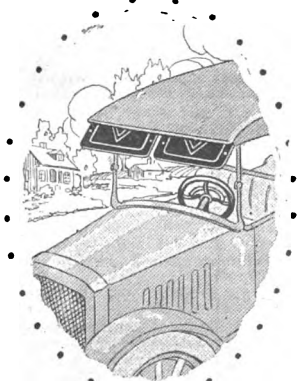
The "J. H." Tonneau or Rear Seat Shield



The only shield used as equipment
Thousands in use

Patented, February 27, 1912, and June 1, 1920. Other patents pending. Our patent upheld by the U. S. Court of Appeals. Beware of infringing imitations. We have distributors in most large cities who carry stock and can take care of your wants immediately. Our prices are moderate.

Tonneau Shield Co., Inc.
Manufacturers
Vesta Bldg. 47-49 W. 63rd St. at Broadway
NEW YORK CITY

CODE TWIN VISOR

Code Twin Visors are made of pressed steel, black enamel finish with nickel trimming.

One size—universal for all open or closed cars.

Price, per pair.....\$5.00
Single 2.50

Code Mfg. Co., Ltd., Chicago, U. S. A.



STAR GLASS WINGS Windshield

There's a mark of "class"—a touch of smartness—about a car equipped with STAR WINGS that appeal to every car owner, and the price is so moderate that few can resist.

Thousands of dealers and owners can testify that STAR WINGS are the neatest and most practical of any in the market—at any price.

There is a demand for wings—and STAR WINGS are the best. It will PAY YOU to have your salesmen devote some of their time to pushing their sale.

STAR WINGS have NO holes in glass

Write for prices and descriptive literature

STAR WING CO.
170 W. Randolph St. Chicago

Please mention The Automobile Trade Directory

SHIELDS, Wind (Continued)

Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.
 Rostand Mfg. Co., Milford, Conn.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Ackerman."
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Ternstedt Mfg. Co., Artillery and Muster Aves., Detroit, Mich. (See page 785.)
 Troy Sun Shade Co., 140 Garfield Ave., Troy, O.
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn.
 Zenite Metal Co., 201-06 W. West St., Indianapolis, Ind. (See page 801.)

SHIELDS, Wind, for Fords

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Motor Products Corporation, 11808 Mack Ave., Detroit, Mich. (See page 843.)
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn.

SHIFTERS, Automatic Gear

C-H—See Cutler Hammer Mfg. Co.
 Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis. "C-H."
 Laursen—See United States Auto Gear Shift Co.
 Nuway Mfg. Co., Otis Bldg., Chicago, Ill.
 United States Auto Gear Shift Co., Truax Bldg., Eau Claire, Wis. "Laursen."
 Wilson Automatic Gear Shift Co., 343 S. Dearborn St., Chicago, Ill.

SHIMS AND LINERS, Brass and Copper

Brewer Tiehener Corp., Cortland, N. Y. (See page 573.)
 Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Shims.) (See page 115.)
 Fit-All—See Laminated Shim Co.
 Fitzgerald Mfg. Co., Torrington, Conn. (See page 439.)
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Kiekhaefer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis. (See page 801.)
 Laminated Shim Co., 14th and Governor Place, Long Island City, N. Y. "Laminum," "Fit-all." (See pages 848 and 849.)
 Laminum—See Laminated Shim Co.
 McCord Mfg. Co., Detroit, Mich.
 Peelsteel Shim Co., Paterson, N. J.
 Upco—See Utility Products Co.
 Utility Products Co., 75 Coniston Ave., Waterbury, Conn. "Upco."
 Worcester Stamped Metal Co., Worcester, Mass. (See page 1051.)

SHIMS, DEMOUNTABLE RIM—See Plates, Demountable Rim Wedge**SHIMS, Rear Axle Taper for Fords**

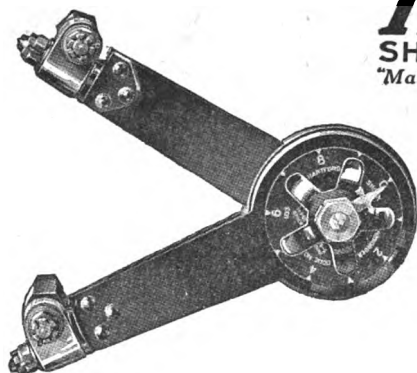
C. & M.—See Sells & Co.
 Cantrell-Miller Machine Works—See Sells & Co.

Sells & Co., O. P., 1834 Broadway, New York, N. Y. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal. "C. & M.")

SHIPPING BAGS—See Bags, Shipping**SHIPPING BLOCKS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING CHOCKS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING CLAMPS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING COVERS—See Covers, Paper and Canvas Shipping****SHOCK ABSORBERS**

(See Springs, Supplementary; also Straps, Rebound)
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Balcrank—See Cincinnati Ball Crank Co.
 Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
 Bull Dog—See Channon-Hughson Co.
 Champion Products Mfg. Co., 271-75 Halsey St., Newark, N. J.
 Channon-Hughson Co., 227-33 W. Erie St., Chicago, Ill. "Bull Dog." (See page 805.)
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. "Balcrank." (See page 249.)
 Courtesy Service & Sales Co., 1302 S. Wabash Ave., Chicago, Ill. (Northern, Illinois, Northern Indiana and Western Michigan Distributors for Houdaille Shock Absorbers.) (See page 841.)
 Cox Brass Mfg. Co., Albany, N. Y. "E-Zer." (See page 171.)
 Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.
 E-Zer—See Cox Brass Mfg. Co.
 Flentje, Ernst, 1643 Cambridge St., Cambridge, Mass.
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Gilman-Davis Co., 224 S. Michigan Ave., Chicago, Ill. (See page 851.)
 H L—See Hinsman Machine & Tool Co.
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)
 Hinsman Machine & Tool Co., Westfield, Mass. "H L."
 Hood Shock Preventer Co., 462 Turk St., San Francisco, Cal.
 Houdaille Co., 1335 Root Bldg., Buffalo, N. Y. (See page 853.)
 Kane Pneumatic Shock Absorber Co., Centra, Wash.
 Landis Engineering & Mfg. Co., 231 Ringgold St., Waynesboro, Pa.
 Lovejoy—See Packard Engineering Co.
 Martin Shock Absorber Corp., 1301-1401 E. Slauson Ave., Los Angeles, Cal.
 Marvel Shock Absorber Corp., 6520 Carnegie Ave., Cleveland, O. (See page 859.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Morey—See Universal Mfg. Co.
 Packard Engineering Co., 1824 Euclid Ave., Cleveland, O. "Lovejoy." (See page 853.)
 Parker—See Universal Distributing Co.
 Parker Shock Absorber Co., 221 S. Hoyle Ave., Chicago, Ill.
 Retrac Co., 67 Sixth St., Long Island City, N. Y.

Everything is listed under the NOUN or principal word



Hartford

SHOCK ABSORBER

"Makes Every Road a Boulevard"

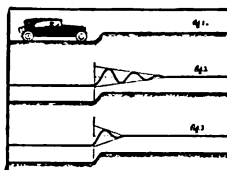


Fig. 1. Car approaching a road bump.

Fig. 2. Movement of car body when car NOT equipped with Hartford Shock Absorbers hits bump.

Fig. 3. Movement of car body when car equipped with Hartfords meets bump.

Note in Fig. 3 how the Hartfords dampen the vibrations of the springs by absorbing the energy of spring movement, saving you from discomfort and protecting your car.

Here's how the Hartford Shock Absorber works

WHEN a car hits a bump, the springs are compressed and then they are suddenly expanded with great force. They tend to do this a number of times. These vibrations cause discomfort and soon will damage a car.

Hartford Shock Absorbers absorb these vibrations and bring the springs gently back to their normal position after every action and reaction. What does this mean? It

means that the light weight car with Hartfords will have the comfort and ease in driving that a heavy, expensive car has. It means also, that the heavy car will have even greater comfort.

With over 500,000 enthusiastic Hartford users backing you up, it's easy to sell Hartfords. Let us acquaint you with our liberal merchandising plan. Write us or ask your jobber for details.

EDWARD V. HARTFORD, Inc.

35 Warren Street, New York, U. S. A.

Works: Jersey City, N. J.

The following cars are factory-equipped with Hartford Shock Absorbers:

Ambassador
Cole

Crawford
Marmon

McFarlan
Mercer

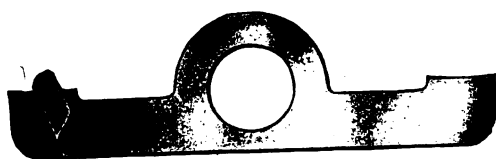
Meteor
National

Revere

Singer

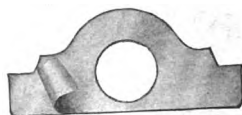
Stutz

Please mention The Automobile Trade Directory



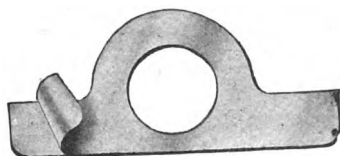
FORD No. 1
Crankshaft Rear Bearing

1/64" thick	each, \$0.08
1/32" thick	each, .13



FORD No. 4
Connecting Rod

1/64" thick	each, \$0.05
1/32" thick	each, .06



FORD No. 2
Crankshaft Front and Center Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .09



CHEVROLET FOUR-NINETY
Connecting Rod

1/64" thick	each, \$0.04
1/32" thick	each, .06
1/16" thick	each, .10



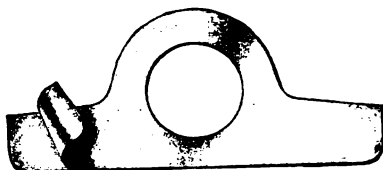
DODGE
Crankshaft Front Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



OVERLAND
Connecting Rod

1/64" thick	each, \$0.05
1/32" thick	each, .07
1/16" thick	each, .13



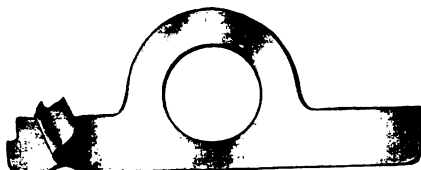
DODGE
Crankshaft Center Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



MAXWELL
Connecting Rod

1/64" thick	each, \$0.04
1/32" thick	each, .06
1/16" thick	each, .10



DODGE
Crankshaft Rear Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



DODGE
Connecting Rod

1/64" thick	each, \$0.05
1/32" thick	each, .07
1/16" thick	each, .12
1/8" (1/16" steel, 1/16" laminated)	each, .15

Please mention The Automobile Trade Directory



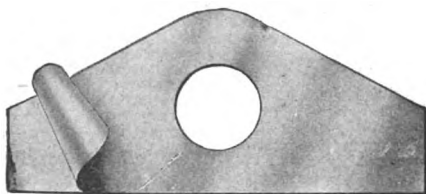
CONTINENTAL 7-N
Connecting Rod

1/64" thick	each,	\$0.04
1/32" thick	each,	.06
1/16" thick	each,	.10
1/8" thick	each,	.20



CONTINENTAL 7-W
Connecting Rod

1/64" thick	each,	\$0.04
1/32" thick	each,	.06
1/16" thick	each,	.10



FIT-ALL No. 1—the Shim That Can be Cut to Fit

1/64" thick	.....	\$2.00 per box of 25
1/32" thick	.....	3.00 per box of 25
Holes already punched, 1 1/2" for 3/8" bolts; 1 7/32" for 1/2" and 7/16" bolts. Laminations .003 in.		

Laminated Shims are made of Laminum, which is composed of layers of brass, .002" or .003" thick, joined together by a metallic binder. They look and act like solid shims, but *they peel*. To adjust a bearing with laminated shims, simply peel off the brass layers with a knife-blade until the shim fits. Stock sizes as illustrated, in packages of 25. Specify thickness. Any shape to order. Babbitted to make a complete babbitt bearing, if desired. Laminum in sheets, 6" x 36", all Laminum or part solid brass. Write for specifications and prices.

Laminated Shim Company, Inc.

14th St. & Governor Place, Long Island City, N. Y.

Detroit: Dime Bank Building
St. Louis: Mazura Mfg. Co.
Chicago: 1118 South Michigan Ave.

LAMINUM

SHOCK ABSORBERS (Continued)

Starkweather-Snook Corp., 246 First St., Moline, Ill. "S. & S."
 S. & S.—See Starkweather-Snook Corp.
 Universal Distributing Co., Dime Bank Bldg., Detroit, Mich. "Parker."
 Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb. "Morey."
 Usana Supply, 1549 Michigan Ave., Chicago, Ill.
 Watson Co., John Warren, 24th & Locust Sts., Philadelphia, Pa.
 Velvet—See Blackledge Mfg. Co.
 Westinghouse Air Spring Co., Smedley Bldg., New Haven, Conn.

SHOCK ABSORBERS for Fords

(See also Springs, Supplementary; also Straps, Rebound)

Bethlehem Spark Plug Co., Bethlehem, Pa.
 Bull Dog—See Channon-Hughson Co.
 C. S.—See Canton Specialty Co.
 Canton Specialty Co., Canton, Ill. "C. S."
 Channon-Hughson Co., 227-33 W. Erie St., Chicago, Ill. "Bull Dog."
 (See page 865.)
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 171.)
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Gilman-Davis Co., 224 S. Michigan Ave., Chicago, Ill. (See page 851.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)
 Hood Shock Preventer Co., 462 Turk St., San Francisco, Cal.
 Lang Engineering Co., J. S., 6 Park Sq., Boston, Mass. "National."
 Luxry—See Specialty Device Co.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 National—See Lang Engineering Co.
 P. V. Auto Co., Arctic, R. I. "Pvaco."
 Pvaco—See P. V. Auto Co.
 S. & S.—See Starkweather-Snook Corp.
 Specialty Device Co., 106 W. Third St., Cincinnati, O. "Luxry."
 Starkweather-Snook Corp., 246 First St., Moline, Ill. "S. & S."

SHOCK ABSORBERS, Airplane

Goodyear Tire & Rubber Co., Akron, O.
 (See page 963.)

SHOES, Brake, for Fords

(Including both lined or faced and unlined shoes)

Adamson Mfg. Co., East Palestine, O.
 Am-Fo-Co Sales Co., Marshalltown, Ia.
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Buckeye—See Central Brass & Fixture Co.
 Bull Dog—See Republic Auto Parts Co.
 Canton Co., A. S., 174 Franklin St., New York, N. Y.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Clamert Mfg. Co., Third & Ross Sts., Pittsburgh, Pa.
 Clipper Tool Co., 284 Mills St., Buffalo, N. Y.
 Dunham Co., Thos., Aurora, Ill.
 (See page 163.)

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.)
 (See page opposite Title Page.)

Emco Mfg. Co., Binghamton, N. Y.
 (See page 521.)
 Ever-Safe—See Never Break Products Co.
 Gilco—See Keystone Products Co.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa.
 (See page 987.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Howell Co., W. H., Geneva, Ill.
 (See page 755.)
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Keystone Products Co., St. Louis, Mo. "Gilco."
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Monroe Auto Equipment Mfg. Co., First St., Monroe, Mich.
 Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
 Never Break Products Co., Bangor, Pa.
 "Ever-Safe." (See page 311.)
 Perfection—See Worthington, A. P.
 Raybestos Co., Bridgeport, Conn.
 (See page 577.)
 Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Bull Dog."
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middleton, Conn. "Rusco." (See page 121.)
 Safety First Brake-Shoe Co., 313 S. Clinton St., Chicago, Ill.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Starr Bros. Bell Co., East Hampton, Conn.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)
 Vetex—See Victor Steel Stamping Co.
 Victor Steel Stamping Co., 3103 Downing St., Denver, Colo. "vetex."
 W-M Co., York, Pa.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y. (See page 247.)
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Perfection."

SHOES, Inner Tire

(Shoes or Sleeves to be used between outer shoe and inner tube as a protector and reinforcement. For Outer Shoes—See Sleeves, Tire Repair)

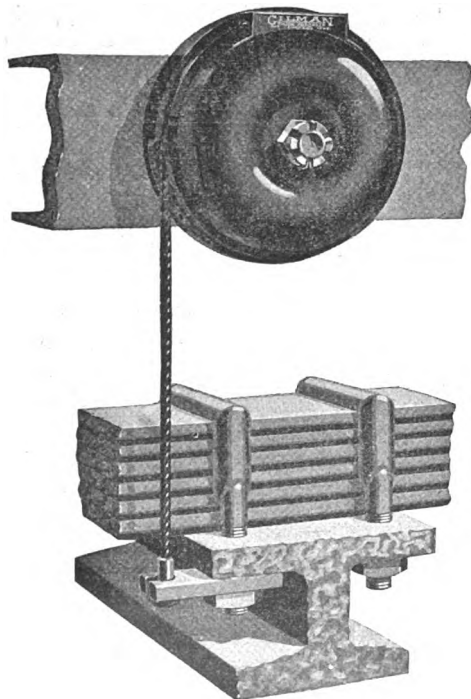
Acme—See Chicago Tire Goods Co.
 Acme—See Eno Rubber Co.
 Ajar—See Chicago Tire Goods Co.
 Ajax Rubber Co., New York, N. Y.
 (See page 955.)
 Amazon Rubber Co., Akron, O. "O'Neill."
 American—See Chicago Tire Goods Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Tredkota."
 American Rubber & Tire Co., 100 Beach St., Akron, O.
 American Tire & Reliner Co., 413-15 Bridge St., Grand Rapids, Mich.
 Arlington—See Voorhees Rubber Mfg. Co.
 Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.
 Atwell Mfg. Co., 825 N. Main St., Independence, Mo.
 Autocessory Sales Co., 542 W. Jackson Blvd., Chicago, Ill. "Insurt."
 Buckeye Reliner Producing Co., 653 N. Jackson St., Lima, O.

Everything is listed under the NOUN or principal word

GILMAN

SHOCK ABSORBER

Takes the Kick from the Recoil



The Gilman smoothly and positively controls the recoiling movement of an automobile spring the entire distance of its travel without harsh checking or snubbing at any stage.

It allows a car to ride upon its springs without restricting their downward movement. It completely eliminates the disagreeable upthrow which breaks the springs, jolts the car and jars the occupants.

It is the only shock absorber which can be adjusted with a screw driver while it remains upon the car.

It is handsome and compact in design. Its working parts are completely enclosed. Its attachment is simple. One type of fitting, applicable to fully 90 per cent of all makes of cars, makes it ideal for jobbers and dealers to stock.

PRICES:

Model C, set of 4 with fittings complete for cars weighing up to 3500 lbs., including Dodge, Buick, Nash, Chevrolet, Oakland, Oldsmobile, etc....\$35.00

Ford Model, set of 2, with fittings complete..... 18.50

Model B, set of 4, for cars over 3500 lbs., with fittings complete, ready for delivery Spring of 1921..... 50.00

GILMAN-DAVIS COMPANY

224 S. MICHIGAN AVENUE

CHICAGO

Please mention The Automobile Trade Directory

SHOES, Inner Tire (Continued)

- Bull Dog—See Eastern Auto Specialty Co.
 Bull Dog—See Pennsylvania Rubber Co. of America.
 Bull Dog—See Polson Rubber Co.
 Bull Dog Tire Repair Co., 18 S. Fifth Ave., Chicago, Ill.
 C-O-T—See Tingley & Co.
 Champion—See Stephens Rubber Co.
 Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme," "Ajax," "American."
 Coffield Tire Protector Co., 117 W. Court St., Dayton, O.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga., "Holdfast."
 Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Interlock," "Rival," "Leader."
 Dural Rubber Corp., Maple Ave., Flemington, N. J.
 Eastern Auto Specialty Co., 926 Columbia St., Utica, N. Y. "Bull Dog."
 Eastern Tire & Rubber Co., 78 W. Second St. (South Boston), Boston, Mass.
 Egyptian—See Polson Rubber Co.
 Eno Rubber Co., 1028 S. Los Angeles St., Los Angeles, Cal. "Acme," "Peerless," "Samson," "Leech," "Jumbo."
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "No-Flo."
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Ever Last Tread Co., 128 E. New York St., Indianapolis, Ind.
 Excel Rubber Co., 116 Broad St., Wadsworth, O. "X. L."
 Falls Rubber Co., Cuyahoga Falls, O.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Firestone Tire & Rubber Co., Miller & Swettzer Aves., Akron, O.
 First National Tire & Relineer Co., 55 Compau Ave., N. W., Grand Rapids, Mich. (See page 665).
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 Fisher Rubber Co., 1816 St. Clair Ave., Cleveland, O.
 Gates Rubber Co., Broadway & Tennessee Sts., Denver, Colo. "Vulco."
 General Tire & Rubber Co., E. Market St., Akron, O. "Red Coat."
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O.
 Goodrich Co., B. F. S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O. (See page 963).
 Hagstrom Bros. Mfg. Co., Lindsborg, Kans.
 Hall Syndicate, Inc., 1310 Commonwealth Bldg., Philadelphia, Pa. (See page 905).
 Harkness & Fowler, 119 W. Main St., Louisville, Ky.
 Holdfast—See Diamond Holdfast Rubber Co.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 Inner Shoe Tire Co., Oakes & Ellsworth Sts., Grand Rapids, Mich. "Innershu," "Shurhold," "Klincher."
 Innershu—See Inner Shoe Tire Co.
 Insurt—See Autocessory Sales Co.
 Interlock—See Double Fabric Tire Co.
 Jon-Con Tire Protector Co., 2124 N. 15th St., Philadelphia, Pa.
 Jumbo—See Eno Rubber Co.
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
 Klincher—See Inner Shoe Tire Co.
 Lafayette Tire Co., 511-13 N. Ninth St., Lafayette, Ind.
 Leader—See Double Fabric Tire Co.
 Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
 Leech—See Eno Rubber Co.
 Lion—See Loewenthal Co.
 Loewenthal Co., 947 W. 30th St., Chicago, Ill. "Lion."
 Mason-Ryckoff Corp., 542 W. Jackson Blvd., Chicago, Ill. "Peerless," "Sturdy."
 Maxotire—See Climax Rubber Co.
 Mercer Rubber Co., Hamilton Square, N. J.
 Midland Rubber Products Co., 1213-17 W. 15th St., Chicago, Ill.
 Mile-Multiplier—See Tire In-Sole Mfg. Co.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 National—See Stephens Rubber Co.
 Miracle—See Rawhide Products Co.
 No-Flo—See Esner Mfg. Co.
 O'Neil—See Amazon Rubber Co.
 Peerless Mfg. Corp., 1522-24 St. Louis Ave., Kansas City, Mo.
 Peerless—See Eno Rubber Co.
 Peerless—See Mason-Ryckoff Corp.
 Peerless—See Polson Rubber Co.
 Pennsylvania Rubber Co. of America, Jeanette, Pa. "Bull Dog."
 Perfection—See Stephens Rubber Co.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 705).
 Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."
 Phillips & Co., L. F., 1444 S. Morgan St., Chicago, Ill.
 Planet Rubber Co., 223 E. Ninth St., Los Angeles, Cal.
 Polson Rubber Co., Doan Ave. & Nickel Plate R. R., Cleveland, O. "Bull Dog," "Egyptian," "Peerless."
 Porcupine Sales Corp., Hutton Bldg., Spokane, Wash.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Racine Rubber Co., Asylum Ave., Racine, Wis.
 Rawhide Products Co., 1834 Broadway, New York, N. Y. "Miracle."
 Rawhide Tire Co., 1140 Broadway, New York, N. Y.
 Ray Tire & Rubber Co., 833 Rees St., Chicago, Ill.
 R-E—See Roose Mfg. Co.
 Red Coat—See General Tire & Rubber Co.
 Red Line, Inc., Grand Rapids, Mich. (See page 667).
 Re-Miller Rubber Co., Ashland, O.
 Reliable—See Stephens Rubber Co.
 Rival—See Double Fabric Tire Co.
 Roose Mfg. Co., 827-83 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Samson—See Eno Rubber Co.
 Security Blow-out Holder Mfg. Co., Leggett Bldg., Fairfield, Ia.
 Security—See Perry Auto Co.
 Shur-Hold—See Inner Shoe Tire Co.
 Sitka Tire Core Co., Des Moines, Ia.
 Spencer—See Voorhees Rubber Mfg. Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Reliable," "Champion," "National," "Perfection," "Wear-ever."
 Sterling Tire Corp., Rutherford, N. J.
 Stretchless Inside Tire Co., 618 Golden Gate Ave., San Francisco, Cal.
 Sturdy—See Mason-Ryckoff Corp.

Everything is listed under the NOUN or principal word

Grey Iron Castings Malleable Iron Castings Screw Machine Products

We specialize in Rocker Arm
Shafts, Valve Rollers and Valve
Roller Pins.

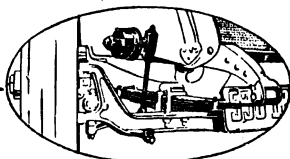
Bronze Bushings
and
Babbitt Lined Bearings

Drop Forgings
Either rough or machined

Gilmore-Winans Co.

306 Owen Bldg.
Detroit, Mich.

60 Lafayette Blvd.
Main 5816



Comfort Houdaille Hydraulic (Say Hoo-dye) Shock Absorbers

GIVE absolute comfort to every car.
Prevent body sway, spring break-
age, check rebound.

Houdailles are standard equipment
on leading European cars, such as
Delage, Minerva, Panhard, Pic-Pic,
Peugot, Rochet-Schneider, etc., also
American Cunningham and Duesen-
berg Straight 8.

THE HOUDAILLE CO.

1335 Root Bldg.

Buffalo, N. Y.



Why Dealers Should Sell LOVEJOY HYDRAULIC Shock Absorbers

They eliminate all side sway.
They give equal comfort with one passenger or seven.
They do not require periodic repairs or attention.
They never require lubrication or adjustment.
They are sealed to keep oil in and dirt out.
They are silent and inconspicuous.
You can sell on the basis of an absolute guarantee. We
stand behind you.
Price per set of four, with all attachments, \$115 F. O. B.
Cleveland. Generous discounts to dealers. Additional
charge for installing. In ordering, specify make and model
of car.

THE PACKARD ENGINEERING CO., 1824 Euclid Ave., Cleveland

The following distributors are prepared to give you complete service on Lovejoy Hydraulic
Shock Absorbers: DISTRIBUTORS

Lovejoy Mfg. Co.
1040 Commonwealth Ave.
Boston, Mass.

Clark Equipment Co.
1755 Broadway
New York City

D. & W. Sales Company
1471 Main St.
Buffalo, N. Y.

Inventors' Products Co.
141 N. Fourth St.
Columbus, Ohio

H. Wilcox Sales Company
648 N. Meridian Ave.
Indianapolis, Ind.

Simon Bros.
3542 So. Michigan Ave.
Chicago, Ill.

Rollin Berry Blair
632 St. Joseph St.
New Orleans, La.

Lovejoy Sales Co.
1001 Main St.
Jacksonville, Fla.

Seranton Motor Car Co.
430 Dix Court
Scranton, Pa.

United Motor Products Co.
1805 Grand Ave.
Kansas City, Mo.

Henry E. Schmidt
1529 Eleventh Ave.
Seattle, Wash.

Ruben Supply Co.
5th Ave. & Walnut St.
McKeesport, Pa.

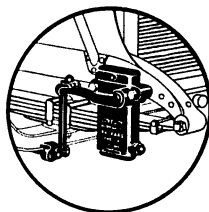
Black Frasier Motor Car Co.
Charleston, S. C.

Rea Motor Co.
Fort Worth, Tex.

Gramm Bernstein Motor Sales Co.
5872 Ellsworth Ave.
Pittsburgh, Pa.

Park Road Sales & Service Co.
Osper, Wyo.

George Gmura
65 Walker Ave.
Bradford, Pa.



They last as long as your car—
and make your car last longer

Please mention The Automobile Trade Directory

SHOES, Inner Tire (Continued)

Sturges Tire & Rubber Co., 26th & Union Sts., Oakland, Cal.
 Superior—See Stephens Rubber Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 551.)
 Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C-O-T."
 Tire-Insole Mfg. Co., Findlay, Ohio. "Mile Multiplier."
 Tredkote—See American Automobile Accessories Co.
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Viking—See Voorhees Rubber Mfg. Co.
 Vitalic—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Postwick Ave., Jersey City, N. J. "Arlington," "Spencer," "Viking."
 Vulco—See Gates Rubber Co.
 Waban Webbing Co., 207 Essex St., Boston, Mass.
 Wear-ever—See Stephens Rubber Co.
 X-L—See Excel Rubber Co.

SHOP BOXES—See Boxes, Sheet Metal

SHOP STOOLS—See Stools, Steel Shop

SHOP VULCANIZERS—See Vulcanizers, Shop.

SHOVELS, COLLAPSIBLE—See Spades, Collapsible

SHOWS—See Expositions and Shows

SHUTTERS, Automatic, Radiator

(Metal Shutter automatically opened or closed by a thermostat—See also Regulators, Water; Also Valves, Water Regulating. For hand operated Shutters—See Shutters, Metal Radiator)
 Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 635.)
 Winterfront—See Pines Mfg. Co.

SHUTTERS, Automatic Radiator for Fords

(Metal Shutter automatically opened or closed by a thermostat—See also Regulators, Water; Also Valves, Water Regulating. For hand operated Shutters—See Shutters, Metal Radiator)
 Amco—See American Metals Corp.
 American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."
 Michigan Auto Products Co., 2008 Grand River Ave. Detroit, Mich.
 Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 635.)
 Winterfront—See Pines Mfg. Co.

SHUTTERS, Metal Radiator

(Metal Shutters for protecting the radiator in cold weather; For Radiator Covers—See Covers, Radiator; For Automatic Shutters—See Shutters, Automatic)

A. A. A. Mfg. Corp., 509 W. 42nd St., New York, N. Y. (See page 723.)
 Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 335.)
 Amco—See American Metals Corp.
 American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."
 Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.

Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.
 Peacock Radiator Guard Co., 275 Jefferson St., E. Detroit, Mich.
 U. S. E. Corp., 7 W. 61st St., New York, N. Y.

SHUTTERS, Metal Radiator for Fords

(Metal Shutters for protecting the radiator in cold weather; For Radiator Covers—See Covers, Radiator; For Automatic Shutters—See Shutters, Automatic)

A. A. A. Mfg. Corp., 509 W. 42nd St., New York, N. Y. (See page 723.)
 Amco—See American Metals Corp.
 American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."
 Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.
 U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis. (See page 1061.)

SHUTTERS, RADIATOR—See Shutters, Metal Radiator; Also Shutters, Automatic Radiator

SIDE CARS, MOTORCYCLE—See Cars, Motorcycle Side

SIDE LAMP BRACKETS—See Brackets, Side and Tail Lamp

SIDE LAMPS—See Lamps

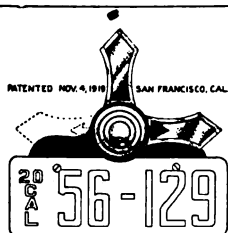
SIDEWALK PUMPS—See Tanks and Systems, Gasoline Storage

SIGHT-FEEDS, Independent

(For installing on dash or instrument boards to show when oil is feeding or flowing properly—See also Gages)

American Brass & Iron Co., Detroit, Mich. (See page 205.)
 Climax Motor Devices, Chagrin Falls, O. (See pages 409 and 705.)
 Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill.
 Michigan Lubricator Co., Detroit, Mich. (See page 263.)
 Morris Co., George W., Layard St. & Douglas Ave., Racine, Wis.
 Nagel Electric Co., W. G., Toledo, O. (See page 425.)
 National Gauge & Equipment Co., La Crosse, Wis. (See page 425.)
 Pedersen Lubricator Co., 636 First Ave., New York, N. Y.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 United States Gauge Co., 37 Liberty St., New York, N. Y. (See page 433.)
 Wilkinson Co., Wm. H., Main St., West Medway, Mass.

Everything is listed under the NOUN or principal word



**Special Opportunities for
Dealers and Distributors.
Write!**

OF COURSE IT IS

When you hear a fellow dealer say he has at last found *one* Signal that sells, satisfies, and *pays*, you know of course he means *Day-Nite* electro mechanical Signal—the *one* Signal fully efficient day and night *both*. Write us—we'll prove it.

DAY-NITE AUTO SIGNAL CO.
82 EIGHTH STREET, SAN FRANCISCO
MANUFACTURERS

Trade Mark
DAY-NITE SIGNAL
Registered



THE GREEN LOCK
Makes a Policeman of Every Passenger

Note the spoke grip—it is impossible to turn the Green Lock when it is in place.

It clamps firmly around the spoke and the rim of the wheel. No thief would dare tamper with it.

We have an unusually attractive dealers' proposition that will make money for you. Write today.

THE GREEN LOCK COMPANY
418 Lightner Bldg. DETROIT, MICH.



\$20⁰⁰

\$20⁰⁰

The Automatic Rear- Warning Device

One size fits all cars

The only absolutely mechanical four-in-one, day and night rear-warning device. Positive in its action—operates independent of electricity. Installs on any motor vehicle in 30 minutes. Signals instantly, accurately, constantly. Foot brake says "Stop", automatically; finger-tip says "Right" or "Left" turn. Red bull's-eye and double arrow head combined signals "Caution" at all other times.

Auto Indicator is authorized by law, endorsed by automotive engineers, guaranteed by its manufacturer and is already in use guarding life and property on 35,000 fine American motor cars and trucks. Write for complete details regarding our proposition and discounts to dealers.

THE AUTO INDICATOR COMPANY
210-218 Ottawa Ave., N. W., Grand Rapids, Michigan

AUTO INDICATOR
Commands Attention—Demands Safety

**One Copy of
Your Catalog**
—IF YOU PLEASE

**THE AUTOMOBILE
TRADE DIRECTORY**
243 West 39th St., New York

AN easy way in which the manufacturer may keep his buyers informed of what he is doing, of what he has to offer them in the way of new goods, is to keep sending us, regularly, his catalogs and other selling literature.

This gives us an opportunity to make changes and additions and to insure the correctness of our classification of the manufacturer's various products. Your catalog in our files is a cheap insurance against the possibility of error and omission. **SEND US YOUR CATALOGS.**

Please mention The Automobile Trade Directory

SIGNALS, Direction Indicating or Traffic

(Devices for attaching to a car to enable the operator to indicate when a turn or stop is about to be made)

Acme Signal Co., 71 Columbia St., Seattle, Wash.
 Akron-Newton F. & M. Co., Newton Falls, O. "Garl."
 Aro—See Smith Co.
 Arrow Mfg. Co., 618-22 Broadway, Toledo, O. "Fla. Ray."
 Auto Equipment Co., 36 Pearl St., Hartford, Conn.
 Auto Indicator Co., 210-18 Ottawa Ave., N. W., Grand Rapids, Mich. (See page 856.)
 Auto Safety Signal Co., 22 Allen St., Rochester, N. Y. "Signal-Lite."
 Auto Signal Mfg. Co., 1610 Jefferson St., Sullivan, Ill.
 Auto Tail Light Co., Shelbyville, Ind. "Safety First."
 Automatic Safety Signal Co., Press Bldg., Portland, Me. "Wallace."
 Automotive Accessory Co., Philadelphia, Pa. "Autophore."
 Autophore—See Automotive Accessory Co.
 B. & M. Co., Ambler, Pa. "Day-n-nite."
 Begley Mechanical Corp., Beekman St., New York, N. Y. "Tel-U."
 Bates—See Ryan Corp.
 Bradley Co., H. E., 720 S. Fourth St., Minneapolis, Minn.
 Britton Auto Signal Co., 1137 Champlain St., Toledo, O.
 Buff Mfg. Co., Wichita, Kans.
 Bunyan Mfg. Co.—See Loewus, Edwin H.
 Chicago Automatic Signal Co., 56 W. Randolph St., Chicago, Ill.
 Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill. "Kobzy."
 Comer—See Auto Signal Co.
 Cowles & Co., C., New Haven, Conn.
 D. T. S.—See Denver Traffic Signal & Mfg. Co.
 Day-n-nite—See B. & M. Co.
 Day-Nite Auto Signal Co., 82 Eighth St., San Francisco, Cal. (See page 853.)
 Denver Traffic Signal & Mfg. Co., 1835 Williams St., Denver, Colo. "D. T. S."
 Diamond Signal Co., 1207 Van Ness Ave., San Francisco, Cal.
 Dolan—See Gartley-Weston Mfg. Co.
 Double Safety Signal Co., 192 N. Clark St., Chicago, Ill.
 Fla-Ray—See Arrow Mfg. Co.
 Fow Specialty Co., 145 N. Seventh St., Philadelphia, Pa.
 Fow-Toor—See Toor Products.
 Garl—See Akron-Newton F. & M. Co.
 Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Dolan."
 General Motor Devices Co., 5235 Ravenswood Ave., Chicago, Ill. "Traffic-Glide."
 General Safety Signal Co.—See Green Hand Safety Signal Co.
 Georger, C. H., 639-41 Main St., Buffalo, N. Y.
 Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich. "Thullen."
 Green Hand—See Green Hand Safety Signal Co.
 Green Hand Safety Signal Co., 47 W. 34th St., New York, N. Y. (Sole Distributors for General Safety Signal Co., Newark, N. J. "Green Hand.")
 Hankee Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.
 Hart's Auto Signal Tail Light Co., 7 N. First St., San Jose, Cal.
 Hysig Co., 701 North Ave., Plainfield, N. J.
 International Automatic Appliance Co., Mutual Life Bldg., Buffalo, N. Y.
 Kloepper-Springfield Autophore Co., 10 W. High St., Springfield, O.

Kobzy—See Chicago Die & Specialty Co.
 Lexington Signal Co., Lexington, Ky.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributors for Bunyan Mfg. Co., Cleveland, O. "Tell-U-When.")
 Lunoe & Soule, 622 79th St., Brooklyn, N. Y. "Warno."
 Masco—See Myers Auto Signal Co.
 Myers Auto Signal Co., 143 Erie St., Toledo, Ohio. "Masco."
 National Auto Signal Co., 1428 Bush St., San Francisco, Cal.
 Nelson & Co., L. R., 1715 S. Washington St., Peoria, Ill.
 Neverout—See Rose Mfg. Co.
 P. A. T. S. Mfg. Co., Lodi, Cal. "Positive."
 Positive—See P. A. T. S. Mfg. Co.
 Protex Signal Co., Park Bldg., Cleveland, O. (See page 513.)
 Reliable Auto Safety Signal Co., 1308 Steiner St., San Francisco, Cal.
 Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 563.)
 Rothermich, A. P., 2915 N. Taylor Ave., St. Louis, Mo.
 Ryan Corp., Phoenix, N. Y. "Bates."
 S-R-L—See Union Machine Co.
 Safficator—See Universal Safety Corp.
 Safety First—See Auto Tail Light Co.
 Signal-Lite—See Auto Safety Signal Co.
 Smith Co., W. J., 1834 Broadway, New York, N. Y. "Aro." (See page 783.)
 Smith Signal Corp., 53-55 W. 66th St., New York, N. Y.
 Star Light—See Universal Star Light Signal Corp.
 Tell-U—See Begley Mechanical Corp.
 Tell-U-When—See Loewus, Edwin H.
 Thullen—See Grand Rapids Brass Co.
 Toor Products, 29 W. 34th St., New York, N. Y. "Fow-Toor."
 Traffic-Glide—See General Motor Devices Co.
 Turn-O-Stop Mfg. Corp., 521 W. 23rd St., New York, N. Y.
 U. S. A.—See Universal Safety Appliance Corp.
 Union Machine Co., 133 University Ave., St. Paul, Minn. "S-R-L."
 Universal Electric Automobile Signal, 6 Beacon St., Boston, Mass.
 Universal Safety Corp., Decatur, Ill. "Safficator." (See page 729.)
 Universal Safety Appliance Corp., 414 E. Livingston Ave., Baltimore, Md. "U. S. A."
 Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
 Universal Star Light Signal Corp., 718 Atlantic Ave., Brooklyn, N. Y. "Star Light."
 Wagner Auto Signal Co., 1524 Franklin St., Oakland, Cal.
 Wallace—See Automatic Safety Signal Co.
 Warno—See Lunoe & Soule.
 Watch-A-Stop Sales Co., 1618 Thompson St., Philadelphia, Pa.
 Which-Way Advisor Signal Co., 797 Bailey Ave., Buffalo, N. Y.
 Williams Mfg. Co., 125 W. 35th St., Los Angeles, Cal.
 Worth Accessories Co., 6 Beacon St., Boston, Mass.
 Wright Traffic Signal Co., Cincinnati, O.

SIGNALS, WARNING—See Horns, Exhaust

SIGNS, Electric

American Sign Co., Kalamazoo, Mich. (See page 857.)

SIGNS, Enameled

Baltimore Enamel & Novelty Co., ft. Allen St., Baltimore, Md.
 Enameled Steel Sign Co., 223 N. State St., Chicago, Ill.

Everything is listed under the NOUN or principal word

ELECTRIC SIGNS

Your customers have seen many electric signs. Did they see yours? If you have the right kind, the right size, and the right location on your building; yes. If you have a poor one, one too small, badly located on the building, part of the lamps burned out and not replaced, or if you have none at all, quite probably they did not.

Automobile merchandising and garage service needs, and will profit by, an unusual amount of electric advertising. People used to be at home reading the papers in the evening; now they are out driving about and will see your electric sign if you have one.

An "American" electric advertising sign will tell your prospective customer **WHO** you are, **WHERE** you are, and **WHAT** you have to sell all at one and the same time. This three fold impression is not produced by any other form of advertising.

The "American" is made to order (not a stock job) beautiful and attractive by day as well as brilliant, fascinating and convincing by night. The "American" has no superior in design, construction, durability, and economy.

The "American" is furnished in any of the important types of electric signs; lens letters, outside lamp type letters, opal glass letters, or in art glass faces.

The latest creations in colored illumination with moving effects, possible only through a combination of colored lamps with the colored "American" lenses.

Our flexible oven-baked enamel finish is produced in any desired color or tint, with trimmings in harmonizing colors or gold leaf.

The "American" is built and finished as you want it and not like your competitor's sign—an advertising advantage decidedly beneficial to you.

Buy an "AMERICAN". Write for illustrations, special hand sketch, or any other desired information.

AMERICAN SIGN COMPANY
Kalamazoo, Michigan U. S. A.



HUDSON
SUPER
SIX

Packard



GARAGE

REO

**KELLY
SPRINGFIELD
TIRES**

Studebaker



DODGE

Cadillac



SIGNS, Enameled (Continued)

General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.

Ing-Rich—See Ingram-Richardson Mfg. Co.

Ingram-Richardson Mfg. Co., Beaver Falls, Pa. "Ing-Rich."

Murdock Co., James W., 116 Opera Pl., Cincinnati, O.

Shank Sign Co., E. A., 19 Park Row, New York, N. Y.

SIGNS, RADIATOR—See Monograms, Ornamental

SIGNS, Special Road

Mirrors or reflectors of special design that glow red when the rays from the car headlights strike them—for use as danger signs or signals

Automatic Signal & Sign Co., 905 Rex Ave., N. E., Canton, O. "Dependable."

Dependable—See Automatic Signal & Sign Co.

SILENCERS, EXHAUST—See Mufflers

SILENCERS, FENDER, FOR FORDS—See Braces, Mud Guard

SILENCERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard

SILENCERS, Overhead Valve

Frey Sales Co., 418 Beard Ave., Buffalo, N. Y. "J. C. B."

J. C. B.—See Frey Sales Co.

KHK—See Kay Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "KHK."

Newton Mfg. Co., Church St., Plainville, Conn. Soenksen-Spiers Engineering Co., Aurora, Ill. "Soso."

Sosco—See Soenksen-Spiers Engineering Co. Stewart Mfg. Co., Oakland, Cal. (See page 249.)

SILENCERS, RADIUS ROD, FOR FORDS—See Anti-Rattlers, Radius Rod

SILENCERS, SPINDLE ARM, FOR FORDS—See Anti-Rattlers, Spindle Arm

SILENCERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column

SILENCERS, STEERING ROD, FOR FORDS—See Anti-Rattlers, Steering Rod

SILK, Spool

Sauquoit Silk Mfg. Co., Philadelphia, Pa.

SILK, Upholstery

Cheney Bros., South Manchester, Conn.

Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 271.)

Monotuck Silk Co., Florence, Mass.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 514.)

Sauquoit Silk Mfg. Co., Philadelphia, Pa.

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

Shirley Corp., 250 W. 54th St., New York, N. Y. "Wearwell."

Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)

Wearwell—See Shirley Corp.

SILLS, WOOD BODY—See Parts, Wood

SILVER, GERMAN—See Brass, Sheet

SINGLE SPARK IGNITION SYSTEMS—See Systems, Battery Ignition

SIREN HORNS—See Horns, Siren

SKID CHAIN APPLIERS—See Tools, Tire Chain Attaching

SKID CHAIN FASTENERS—See Fasteners, Tire Chain

SKIDS, Car Raising

(For facilitating repair work or cleaning—used as a substitute for a pit)

Montour Steel Co., Montour Falls, N. Y.

Portable Auto Trench Co., 2 Depot Yard, Lynn, Mass.

SKIING MACHINES—See Machines, Tire Skiing

SLAT IRONS—See Irons, Slat

SLEEVE PROTECTORS—See Protectors, Sleeve

SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

SLEEVES or BANDS, Tire Repair

(For lacing or strapping around a tire to close a puncture or blowout. For sleeves to be used between inner tube and outer shoe—See Shoes, Inner Tire)

Acme—See Chicago Tire Goods Co.

Ajax Rubber Co., New York, N. Y. (See page 955.)

Amazon Rubber Co., Akron, O. "O'Neill." American Chain Co., Bridgeport, Conn. "Dobbins." (See page 543.)

Atco—See Autocrat Tire Co.

Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.

Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."

Auto Tire Boat Co., 1210 Webster Ave., Chicago, Ill.

Autocrat Tire Co., Main & F Sts., Midlothian, Tex. "Atco."

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Broughton Co., George H., 256 Main St., Buffalo, N. Y.

Bull Dog—See Polson Rubber Co.

Chicago Raw Hide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Krome."

Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."

Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."

Corker—See General Tire & Rubber Co.

Corona—See Voorhees Rubber Mfg. Co.

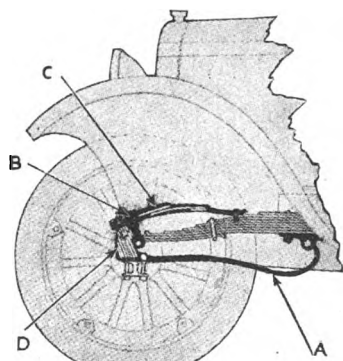
Dobbins—See American Chain Co.

Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Rival."

Everything is listed under the NOUN or principal word

FOR CHEVROLET

and All Cars Equipped With CANTILEVER SPRINGS



A—Spring Steel Radius Rod
B—Pendulum Leverage Hanger
C—Vibration Equalizer Springs
D—Pivotal Support or Axle Standard

Here Is What Marvels Do for Cantilever Springs

1. Lift the Cantilever Spring entirely off of the axle and suspend it free to move in a pivotal hanger. Now all the propelling, or transmission force of the car is eliminated from the cantilever spring. Sounds unusual, doesn't it? But 5,000 sets have been running for many months in mountainous territory, and they proved to be a sensational winner right from the start.

2. Next a yieldable radius rod of spring steel transmits the propelling force.

3. Impact forces delivered by ruts, bumps and rough spots, act instantly on the pendulum leverage arm (sensitive to a few pounds) and are drawn off in the top equalizer springs.

Four Points of Resilience

Each Marvel Shock Absorber produces resilience at four points—four sources of gentle springy action, where only one existed before. The only shock absorber of any type that absorbs more than a vertical rebound bump. Marvels will cushion a lateral thrust (head-on), as the impact force is shunted directly to a pendulum hanger and are drawn off on the sensitive equalizer springs.

Easy to Install

Marvel Shock Absorbers come assembled complete, ready to install, with full set front and rear. Quickly installed and nothing to get out of order or to adjust.

Price

The cost of a complete set of Marvel Shock Absorbers for a 490 Chevrolet is \$35.00 at any distribution point in the United States. For other type cars having cantilever springs the price varies.

MARVEL SHOCK ABSORBER CORP.
6520 CARNEGIE AVENUE CLEVELAND, OHIO

Exclusive Distributors:

CANADA—Marvel Shock Absorber Co., Toronto

CALIFORNIA—B. C. Lund, 2032 Broadway, Oakland

BRANCH—Portland, Oregon

Please mention The Automobile Trade Directory

SLEEVES or BANDS, Tire Repair (Continued)

Durable—See Gates Rubber Co.
 Eastern Tire & Rubber Co., 78 W. Second St.
 (So. Boston), Boston, Mass.
 Empire Tire & Rubber Co., Mulberry St. &
 Clinton Ave., Trenton, N. J.
 Eno Rubber Co., 1026 S. Los Angeles St., Los
 Angeles, Cal.
 Essex Rubber Co., May & Beakes Sts., Tren-
 ton, N. J.
 Evans-Lawrie Co., 708 Beacon St., Bos-
 ton, Mass. (Eastern Distributors for
 "G. K." Sleeves.) (See page 115.)
 Falls Rubber Co., Cayahoga Falls, O.
 Federal Rubber Co. (Cudahy), Milwaukee,
 Wis.
 Firestone Tire & Rubber Co., Miller & Sweet-
 zer Aves., Akron, O.
 First National Tire & Relliner Co., 55
 Campan Ave., N. W., Grand Rapids,
 Mich. (See page 865.)
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 G. & K.—See Graton & Knight Mfg. Co.
 Gates Rubber Co., Broadway & Tennessee
 Sts., Denver, Colo. "Durable."
 General Tire & Rubber Co., E. Market St.,
 Akron, O. "Corker."
 Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 (See page 983.)
 Graton & Knight Mfg. Co., Worcester, Mass.
 "G. & K."
 Indiana Rubber & Insulated Wire Co., Jones-
 boro, Ind.
 Inner Shoe Tire Co., Oakes & Ellsworth Sts.,
 Grand Rapids, Mich.
 Keystone Rubber Mfg. Co., 135 E. 11th St.,
 Erie, Pa.
 Kimball Tire Case Co., 163 Broadway, Council
 Bluffs, Ia.
 Krome—See Chicago Rawhide Mfg. Co.
 Lafayette Tire Co., 511-13 N. Ninth St.,
 Lafayette, Ind.
 Lee Tire & Rubber Co., 245 W. 55th St., New
 York, N. Y.
 Legnard Co., A. B., Waukegan, Ill.
 Michelin Tire Co., Milltown, N. J.
 Miller, Chas. E., 1400 S. Meridian St., Ander-
 son, Ind.
 National—See Stephens Rubber Co.
 National Leather Belt Co., 342 E. 38th St.,
 New York, N. Y.
 O'Neill—See Amazon Rubber Co.
 Pennsylvania Rubber Co. of America, Jean-
 nette, Pa.
 Polson Rubber Co., Doan Ave. & Nickel Plate
 R. R., Cleveland, O.
 Porcupine—See Auto Boot Mfg. Co.
 Racine Rubber Co., Asylum Ave., Racine, Wis.
 Rival—See Double Fabric Tire Co.
 Rugg & Co., E. L. Newark, O.
 Sioux City Tire & Mfg. Co., Fifth & Plymouth
 Sts., Sioux City, Iowa.
 Slapatch—See Wilson Rubber Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St.,
 Kansas City, Mo. "National." "Superior."
 Sturges Tire & Rubber Co., Oakland, Cal.
 Twentieth Century Tire Protector Co., Mid-
 lothian, Tex.
 United States Tire Co., 1790 Broadway, New
 York, N. Y.
 Vitallo—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick
 Ave., Jersey City, N. J. "Corona."
 Wearwell Rubber Co., Kokomo, Ind.

White Mule, Inc., 211 S. Illinois Ave., Car-
 bondale, Ill.
 Wilson Rubber Co., Hubbell Bldg., Des
 Moines, Iowa. "Slapatch."
 Woodworth Mfg. Co., 1-29 Starr Ave., Bing-
 hamton, N. Y.

SNAP HOOKS—See Hooks, Snap

SNAP LOOPS—See Loops, Brass Snap

SOAPS, Automobile

(See also Polishers, Automobile)

Amalie—See Sonnenborn Sons.
 Amberso—See Columbia Refining Co.
 American Crown—See Kirk & Co.
 American Soap & Washoline Co., 140-80 Cen-
 tral Ave., Cohoes, N. Y. "Apollo."
 American Textile Soap Co., 56 Walker St.,
 Springfield, Mass. "Fisk."
 Apollo—See American Soap & Washoline Co.
 Arco Co., Euclid Ave. & E. 65th St., Clevel-
 and, O.
 Armor Oil & Chemical Co., Reserve Bank
 Bldg., Kansas City, Mo. "Wonder Cleaner."
 Armour Soap Works, 81st Pl. & Benson St.,
 Chicago, Ill. "Lustro."
 Arnold, N. B., 1 Sigmourney St., Brooklyn,
 N. Y. "Silknap."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.
 "Century."
 Auto King—See National Soap Co.
 Balkan—See Jones & Bro.
 Baum's Castorine Co., 104 N. George St.,
 Rome, N. Y.
 Blue Ribbon—See International Metal Polish
 Co.
 Boston Blacking Co., Third & Potter Sts.,
 Cambridge, Mass. "Red Fox."
 Buckeye—See Davis-Young Soap Co.
 Butler-Harley Co., 33rd & Master Sts., Phil-
 adelphia, Pa. "Harco."
 Camden Chemical Mfg. Co., 13th & Mickie
 Sts., Camden, N. J. "Greyhound."
 Century—See Arnstein, Eugene.
 Chemical Supply Co., 2450 Canal Rd., Clevel-
 and, O.
 Claire Mfg. Co., 719 W. 63d St., Chicago, Ill.
 "Jinx."
 Cleanseasy—See Winn, Wm. R.
 Clenzo—See Puritan Oil & Paint Co.
 Climax Lubricating Co., 218 N. 13th St., Phila-
 delphia, Pa.
 Columbia Refining Co., 90 West St., New York,
 N. Y. "Amberso."
 Damascus Mfg. Co., 9501 Cassius Ave., Clevel-
 and, O.
 Davies-Young Soap Co., Findlay St. & Big
 Four R. R., Dayton, O. "Buckeye."
 Detroit White Lead Works, 1960 Milwaukee
 Ave., E., Detroit, Mich.
 Duplex—See Enterprise Oil Co.
 Durkee-Atwood Co., 40 Wilder St., Minne-
 apolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Enterprise Oil Co., 164 Chandler St., Buffalo,
 N. Y. "Duplex."
 Esner Mfg. Co., 100 Glendale Ave., Peoria, Ill.
 "Soo-Off-E-Z."
 Excelsior—See Mills Oil Co.
 Fairchild & Bro., M. B., 6 W. Austin Ave.,
 Chicago, Ill.
 Famaco—See Mears Chemical Co.
 Fisk—See American Textile Soap Co.
 Flash Chemical Co., 160-70 Second St., Cam-
 bridge, Mass.

Everything is listed under the NOUN or principal word

REX AUTO SOAP



MADE ONLY OF PUREST VEGETABLE OILS

REX AUTO SOAP surpasses similar products in its quick-working qualities and in its purity. It will not affect the most delicate finish of the car. The Soap itself, and our lithographed displays furnished to dealers make REX the easiest and most profitable seller in the soap field.

LONG ISLAND SOAP COMPANY

Meeker Ave. and Bridgewater St.

Brooklyn, N. Y.

Federal Bronze Cored Bars for Bushings

THE BEST BRONZE for repairs on automobiles, trucks, tractors and machine tools, because IT LASTS THE LONGEST.

Manufactured by the producers of over 5,000,000 BABBITT-LINED, BRONZE-BACK BEARINGS and BRONZE BUSHINGS a year.

Write for Particulars

FEDERAL BEARING & BUSHING CORPORATION
DETROIT, MICHIGAN

MENDALL METAL

Mends Without Welding

Use Mendall Metal to permanently repair cracks in any kind of metal. Chemicals unnecessary. Mendall fluxates with metal when heated to only 250°. Part is repaired in place. Blow torch only tool necessary. Repaired part stands 600° heat or 1200 lbs. pressure. Sold to trade only. Write us today and learn how to do \$100 worth of work with only \$5 worth of material.

Sample Package—Six Bars—\$5.00

THE 4-A PRODUCTS CO.
3103 Downing St., DENVER, COLO.

MOBO AUTO SOAP



The 100% Pure Vegetable-Oil Soap

PUT in a stock of MOBO AUTO SOAP and SHOFO HAND CLEANSER. We will send you a Window Display, lithographed in eight colors, Store Signs, Leaflets and Window Streamers to help move the goods off your shelves.



JOHN T. STANLEY CO., Inc.

30th Street and North River

NEW YORK

Please mention The Automobile Trade Directory

SOAPS, Automobile (Continued)

- Ford & Dennen—See Richmond & Co.
 Frerich & Mansell, 74 Grand St., New York, N. Y.
 G. W.—See Great Western Oil Co.
 Globe Soap Co., Cincinnati, O.
 Glossene—See Lautz Bros. & Co.
 Good, James, 939-41 N. Front St., Philadelphia, Pa.
 Great Western Oil Co., 2855 E. 37th St., Cleveland, O. "G. W."
 Green Lion—See Puritan Soap Co.
 Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill. "Simplex."
 Grayhound—See Camden Chemical Mfg. Co.
 Hachmeister-Lind Chemical Co., 2332 Forbes St., Pittsburgh, Pa. "Hallico."
 Hallico—See Hachmeister-Lind Chemical Co.
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker."
 (See page 220.)
 Harco—See Butler-Harley Co.
 Harral Soap Co., 123-36 Havemeyer St., Brooklyn, N. Y. "Kleeneasy."
 Harris Oil Co., A. W., Providence, R. I.
 (See page 673.)
 Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Lion."
 Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whisoll."
 Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.
 Invincible—See Millers Sons Co.
 Jesco—See Wilson-Martin Co.
 Jewel—See Wadsworth-Howland Co.
 Jinx—See Claire Mfg. Co.
 Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."
 K-K-K—See Killen Chemical Co.
 Kenney Mfg. Corp., F., 860 Dorchester Ave., Boston, Mass.
 Killen Chemical Co., 403 E. Shiawassee St., Lansing, Mich. "K-K-K"
 Kirk & Co., James S., 1233 W. North Ave., Chicago, Ill. "American Crown."
 Kleeneasy—See Harral Soap Co.
 Kleno Mfg. Co., North Weymouth, Mass.
 Klenz—See Symonds Co.
 La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
 Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.
 Lautz Bros. & Co., 44 Hanover St., Buffalo, N. Y. "Glossene."
 Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.
 Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
 Lin-O—See Struns & Son.
 Lin-Oil-Jel—See National Soap Co.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Lion—See Heaney Mfg. Co.
 Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn, N. Y. "Rex."
 (See page 861.)
 Loos & Dilworth, 134 S. Front St., Philadelphia, Pa.
 Luströ—See Armour Soap Works.
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Magic—See Zurn Co.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."
 Middle States Oil Co., Engineers Bldg., Cleveland, O.
 Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."
 Mobo—See Stanley Co.
 Monogram—See New York Lubricating Oil Co.
 Moore Oil Refining Co., York St. & McLean Ave., Cincinnati, O.
 Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmo."
 Murphys—See Phoenix Oil Co.
 Napco—See National Oil Products Co.
 National Oil Products Co., 15 Bergen St., Harrison, N. J. "Napco."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Pioneer."
 National Oil & Supply Co., 130 Frelinghuysen Ave., Newark, N. J. "Viscoa."
 National Soap Co., 1910 Franklin St., Detroit, Mich. "Auto King," "Lin-Oil-Jel."
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 O'Neill Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."
 Oil City Oil & Grease Co., Seneca St., Oil City, Pa.
 Panhard Oil Corp., 395 Broadway, New York, N. Y.
 Parker Refining Co., 1307 W. 11th St., Cleveland, O.
 Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."
 Parko—See Parker Rishor Mfg. Co.
 Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
 Perfection—See Warren Refining & Chemical Co.
 Permatite Mfg. Co., 31 Fifth St., N. E., Minneapolis, Minn. "B-Pee-Tiv."
 Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphys."
 Pioneer—See National Rubber & Specialties Co.
 Powero—See Tide Water Oil Co.
 Puritan Oil & Paint Co., 1213 W. 70th St., Cleveland, O. "Clenzo."
 Puritan Soap Co., 560 Exchange St., Rochester, N. Y.
 Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
 Red Fox—See Boston Blacking Co.
 Rex—See Long Island Soap Co.
 Rexine Co., Pennsylvania & River Sts., Shoboygan, Wis.
 Richmond & Co., C. C., 49 Batterymarch St., Boston, Mass. "Ford & Dennen."
 Rio-Nie—See Durkee-Atwood Co.
 Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "T. B. R."
 Rome—See Howard Lubricants Co.
 Sanosone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
 Simplex—See Green Oil Soap Co.
 Skat Co., 791 Park St., Hartford, Conn.
 Slikup—See Arnold, N. B.
 Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
 Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."

Everything is listed under the NOUN or principal word

When Springs Break, put on

VULCAN
QUALITY
The Replacement Spring

IN
EVERY TOWN
for EVERY CAR

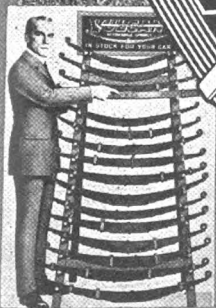


The VULCAN

name plate stands for the best that can be built into springs. We are suggesting to millions of car owners, through such mediums as the Saturday Evening Post, and other national publications, that they look for this name plate.

Dealers who desire quality, service and profit should insist upon our VULCAN name plate on every replacement spring.

If your jobber cannot supply you, write us — today



Jenkins Vulcan Spring Company

Factory:
Richmond, Indiana

SOAPS, Automobile (Continued)

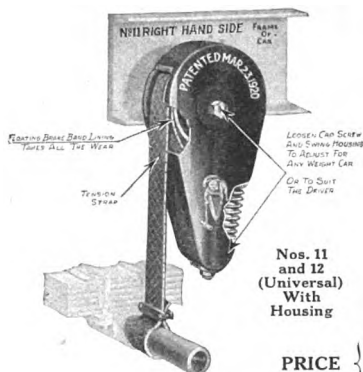
Soo-Off-E-Z—See Esner Mfg. Co.
 Speare's Sons Co., Aiden, 140 Sixth St., Boston, Mass.
 Speedway—See Red "C" Oil Mfg. Co.
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo."
 (See page 861.)
 Strunz & Son, S., 703 Bingham St., Pittsburgh, Pa. "Lin-O."
 Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
 Superior—See Durkee-Atwood Co.
 Symonds Co., Joseph H., Westfield, Mass. "Klenz."
 T. B. R.—See Robertson Products Co.
 Texaco—See Texas Co.
 Texas Co., 17 Battery Place, New York, N. Y. "Texaco."
 Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Powero."
 (See page 873.)
 Truxo—See Wilson-Martin Co.
 Velvet—See O'Neill Oil & Paint Co.
 Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.
 Viscos—See National Oil & Supply Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Walter & Co., W. A., 428 W. Conway St., Baltimore, Md.
 Warren Refining & Chemical Co., Cleveland, O. "Perfection."
 Washzum—See White & Bagley Co.
 White & Bagley Co., Worcester, Mass. "Washzum." (See page 671.)
 Whizoll—See Hollingshead Co.
 Wilson-Martin Co., Camden, N. J. "Jesco," "Truxo."
 Winn, Wm. R., 143 Malden Lane, New York, N. Y. "Cleaneasy."
 Wonder Cleaner—See Armor Oil & Chemical Co.
 Wonder Worker—See Hall-Thompson Co.
 Wundrmo—See Munger Products Co.
 Zurn Co., O. F., 2736-33 N. Broad St., Philadelphia, Pa. "Magic."

SOAPS and PASTES, Hand

A-1 Mfg. Co., Front & Wharton Sts., Philadelphia, Pa.
 Adacol Laboratories, Providence, R. I.
 American Soap and Washoline Co., 140-30 Central Ave., Cohoes, N. Y. "Graham," "S. & H."
 Armour Soap Works, 1355 W. 31st Pl., Chicago, Ill. "M & M," "Pumex."
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Atwell Mfg. Co., 825 N. Main St., Independence, Mo.
 Auto-Remedy Co., Evans St., Cincinnati, O. "Magic."
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Blue Ribbon—See International Metal Polish Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "O-So-Easy," "Sapo."
 Bright Star Sales Corp., 40 S. Seventh St., Philadelphia, Pa.
 Bristol Mfg. Co., 106 Friend St., Boston, Mass. "Jumbo."
 Champion—See Gardner & Co.
 Chauffeur—See Decatur Union Chemical Co.
 Claire Mfg. Co., 719 W. 63d St., Chicago, Ill. "Jinx."
 Cleaneasy—See Winn, Wm. R.
 Cleano—See Durkee-Atwood Co.
 Cleanup—See Flash Chemical Co.
 Cleansum—See White & Bagley Co.
 Colgate & Co., 139 Fulton St., New York, N. Y.
 Corliss Supply & Mfg. Co., 1906 Olive St., St. Louis, Mo.
 Cudahy Packing Co., 111 W. Monroe St., Chicago, Ill. "Goblin."
 Davies-Young Soap Co., Findlay St. & Big Four R.R., Dayton, O. "Whiz."
 Decatur Union Chemical Co., 636 E. Wood St., Decatur, Ill. "Chauffeur."
 Drury Chemical Products Co., 71 W. Eagle St., Buffalo, N. Y. "Kemico Wonder."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "Cleano."
 E-Pec-Tiv—See Permatite Mfg. Co.
 E-Ze Products Co., 3 E. 14th St., New York, N. Y.
 Ericka Mfg. Co., 332 Liberty St., Springfield, Mass. "Itsafine."
 Esner Mfg. Co., 206 Green St., Peoria, Ill. "Soo-Off-E-Z."
 Faverman & Co., 615 Commercial St., San Francisco, Cal. "13."
 Ferret—See Symonds Co.
 Fiebing Chemical Co., 233-40 Reed St., Milwaukee, Wis. "Presto."
 Flash Chemical Co., 180-76 Second St., Cambridge, Mass. "Cleanup."
 Fougere & Co., E., 90-92 Beekman St., New York, N. Y. "Fyno."
 Frisko Mfg. Co., Kansas City, Mo.
 Fyno—See Fougere & Co.
 Gardner & Co., 222 E. 34th St., New York, N. Y. "Champion."
 Garnet Co., Geo. H., 913 Greenleaf St., Allentown, Pa. "Meckano."
 Gastine Co., Bridgeton, N. J.
 Glt Mfg. Co., 23 Franklin St., Westfield, Mass.
 Goblin—See Cudahy Packing Co.
 Graham—See American Soap & Washoline Co.
 Gre-Solvent—See Utility Co.
 Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill.
 Grim-Off—See Pitts Sanitary Co.
 Grime-Off—See Pacific Coast Borax Co.
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker."
 (See page 229.)
 Hand-I-Wash—See Tay-Miller Mfg. Co.
 Harbor Sales & Mfg. Co., 51 E. 42d St., New York, N. Y. "Slack-Shine."
 Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Krystal Selloff."
 I. C. U.—See Livingston Co.
 Imp—See Rath Mfg. Co.
 Instant Products Co., 21 Cambria St., Boston, Mass.
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Itsafine—See Ericka Mfg. Co.
 J. M. Pease—See Kimo Mfg. Co.
 Jewel—See Wadsworth-Howland Co.
 Jinx—See Claire Mfg. Co.
 Jumbo—See Bristol Mfg. Co.
 K-K-K—See Killen Chemical Co.
 Kemico Wonder—See Drury Chemical Products Co.
 Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
 Killen Chemical Co., 403 E. Shawassee St., Lansing, Mich. "K-K-K"
 Kimo Mfg. Co., 2655 Main St., Buffalo, N. Y. "J. M. Pease."

Everything is listed under the NOUN or principal word

"Bull Dog" Bounce Absorber



One single style, at one single price, takes care of cars of all weights and models. No other shock-absorbing device has this feature—can be easily adjusted to suit cars of any weight, springs of any rigidity, or the preference of any driver.

Easily attached; needs no oiling; has no metal parts that will wear and break. No. 11 is made to fit practically all cars; No. 12 for all cars already drilled, or cars on which special drilling will give a better installation. Your dealer will sell you the right one for your car.

PRICE } Per full set of 4.....\$24.00
 } Per pair, front or rear..... 12.00

CHANNON-HUGHSON COMPANY

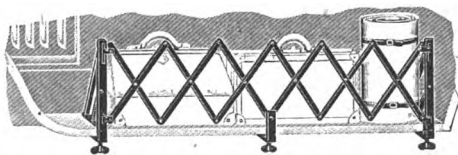
229-233 West Erie Street

CHICAGO, U. S. A.

Star Adjustable Luggage Carrier

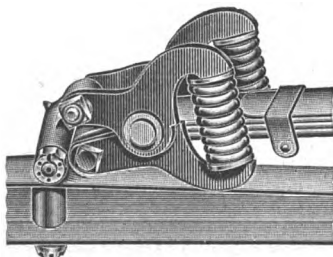
RUNNING BOARD TYPE

Fastens to running board by thumb screw as shown. Easily attached or detached in a moment. Can be folded and carried under seat or in tool box when not in use. Black enamel finish. Fits any car. Each\$6.00



ATTACHED TO RUNNING BOARD

Star Shock Absorbers—For Ford Cars



Star W-X Shock Absorber provides four cushions of comfort. One for each corner of your car.

Easy to attach. You remove only the shackles and put the W-X in their place.

Per set (of four) list.....\$8.00

Also manufacture other accessories: Radius Rod Supports, Rear Axle Truss Rods, Bench and Power Grinders.

Write for Discounts

Manufacturers

STAR SPECIALTY MANUFACTURING CO.

CHICAGO

227 West Erie Street

ILLINOIS

Please mention The Automobile Trade Directory

SOAPS and PASTES, Hand (Continued)

Kleno Mfg. Co., North Weymouth, Mass.
 Krystal Solloff—See Hollingshead Co.
 La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
 Lauts Bros. & Co., 44 Hanover St., Buffalo, N. Y.
 Lava—See Walthe & Co.
 Livingston Co., 161 Day St., New Haven, Conn.
 "I. C. U."
 M & M—See Armour Soap Works.
 Magic—See Auto Remedy Co.
 Meckano—See Garnet Co.
 Mid-Earth Mfg. Co., 2166 W. 53d St., Cleveland, O.
 Mione Mfg. Co., Collingsdale, Pa.
 Mirrolike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Mobo—See Stanley Co.
 Monahan Antiseptic Co., 166-72 N. Curtis St., Chicago, Ill.
 Monogram—See New York Lubricating Oil Co.
 Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmek."
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
 (See page 277.)
 Nowater Cleanser Co., Warren, Pa.
 Norwesco—See Northwestern Chemical Co.
 O-So-Easy—See Boston Blacking Co.
 O-So—See Rand & Byam.
 Pacific Coast Borax Co., 199 William St., New York, N. Y. "Grime-Off."
 Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."
 Parko—See Parker Rishor Mfg. Co.
 Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fee-Tiv."
 Pex Products Co., Buffalo, N. Y.
 Pitts Sanitary Co., Newport, R. I. "Grim-off."
 Presto—See Feibing Chemical Co.
 Pumex—See Armour Soap Works.
 Radium Compound Co., Phoenix, N. Y.
 Rand & Byam, Charlestown, Mass. "O-So."
 Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imp."
 Revivo—See Heaney Mfg. Co.
 Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis.
 Rie-Nie—See Durkee-Atwood Co.
 S. & H.—See American Soap & Washoline Co.
 Sapo—See Boston Blacking Co.
 Shofo—See Stanley Co.
 Skat Co., 791 Park St., Hartford, Conn.
 Skidoo—See Yeasell-Goldstein Corp.
 Slick-Shine—See Harbor Sales & Mfg. Co.
 Slikup—See Arnold, N. B.
 Solly Co., C. B., Drexel Bldg., Philadelphia, Pa.
 Soo-Off-E-Z—See Esner Mfg. Co.
 Spee-Dee—See States Chemical Co.
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Shofo," "Mobo."
 (See page 861.)
 States Chemical Co., 697 W. Austin Ave., Chicago, Ill. "Spee-Dee."
 Sterno Corp., New York, N. Y.
 (See page 229.)
 Symonds Co., Joseph H., Westfield, Mass. "Ferret."
 Tatlock Bros., 183 Tremont St., Rochester, N. Y. "Tat's."

Tat's—See Tatlock Bros.
 Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "Hand-I-Wash."
 Teeaness Products Co., Nyack, N. Y.
 13—See Faverman & Co.
 Trosien, Charles G., 108 Franklin Blvd., Pontiac, Mich.
 United States Soap Co., 514-16 Reading Rd., Cincinnati, O.
 Uno Mfg. Co., 6483 Ravenswood Ave., Chicago, Ill.
 Utility Co., 626 W. 44th St., New York, N. Y. "Gre-Solvent."
 Usum Products Co., 74 Grand St., New York, N. Y.
 Vanco Co., 103 Park Ave., New York, N. Y.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Walthe & Co., Wm. B., Grand Ave. & Second St., St. Louis, Mo. "Lava."
 Wenzelmann Mfg. Co., Galesburg, Ill.
 White & Bagley Co., Worcester, Mass. "Cleamsun." (See page 871.)
 Whiz—See Davies-Young Soap Co.
 Winn, Wm. R., 145 Maiden Lane, New York, N. Y. "Cleaneasy."
 Wonder Worker—See Hall-Thompson Co.
 Wundrmek—See Munger Products Co.
 Yeasell-Goldstein Corp., 489 Buttlers Ave., Columbus, O. "Skidoo."

SOAPSTONE, TIRE—See Tale, Tire

SOCIETIES—See Associations and Societies

SOCKET PLATES, AIRPLANE WING—See Plates, Airplane Wing Socket

SOCKET WRENCHES FOR FORDS—See Wrenches, Special

SOCKETS, ANTI-RATTLING BALL, FOR FORDS—See Anti-Rattlers, Radius Rod; also Anti-Rattlers, Steering Rod

SOCKETS, Bow

(For Flat Irons—See Irons, Flat)

American Forging & Socket Co., Pontiac, Mich.
 Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.
 Bonney Forge & Tool Works, Allentown, Pa.
 Brewer Tichener Corp., Cortland, N. Y. "Pioneer," "Cortland." (See page 573.)
 Cortland—See Brewer Tichener Corp.
 Defco—See Detroit Forging Co.
 Defco—See Scherer & Co.
 Desoco—See Detroit Socket Co.
 Detroit Forging Co., 284 Mt. Elliott Ave., Detroit, Mich. "Defco."
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Mascot—See Detroit Forging Co.
 Pioneer—See Brewer Tichener Corp.
 Scherer & Co., H., 440 Jefferson Ave., E., Detroit, Mich. "Defco."
 Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.
 Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 709.)
 Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.
 Ten Elek, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Everything is listed under the NOUN or principal word

SOCKETS, Electric Lamp

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill.
 Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 557.)
 Amco—See Aid Mfg. Co.
 Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.
 Chicago Electric Mfg. Co., 2317 S. Halsted St., Chicago, Ill. "Handy."
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Douglas & Rudd Mfg. Co., Bronson, Mich.
 Handy—See Chicago Electric Mfg. Co.
 Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Metal Specialties Mfg. Co., 335-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 Millwood-Brackett Co., 1601 Locust St., Des Moines, Iowa. (See page 169.)
 Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)
 Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.
 Presto—See Metal Specialties Mfg. Co.

SOCKETS, LAMP—See **Sockets, Electric Lamp**

SOCKETS, STAKE—See **Pockets, Truck Stake**

SOCKETS, TOP—See **Sockets, Bow**

SOFT RUBBER TUBING—See **Tubing, Soft Rubber**

SOLDER, Aluminum

A & S—See Arrowsmith & Sarchet.
 Acme—See Universal Fluxine Co.
 Albertus & Co., F. A., 206 Ninth St., Milwaukee, Wis. "F. A. A."
 Allen Co., L. B., 4543 N. Lincoln St., Chicago, Ill. "Alumni-Soder."
 Alumni-Soder—See Allen Co.
 Aluminum Brasing Solder Co., Montgomery Bldg., Chester, Pa. "Peters."
 Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Alumunite Mfg. Co., 427 Fourth Ave., New York, N. Y.
 Alumalux Co., E. Shelby St., Sidney, O.
 American Mirete Corp., 106 W. 52d St., New York, N. Y.
 Arrowsmith & Sarchet, Clinton, Ind. "A & S."
 Arrow—See Lester Co.
 Austin & Co., M. B., 706 W. Jackson Blvd., Chicago, Ill. "Minco's."
 Berry & Co., L. H., 2409 Lyndale Ave., S., Minneapolis, Minn.
 City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.
 Crown Aluminum Solder Co., 833 E. 184th St., New York, N. Y.
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Eagle Smelting & Refining Works, Trenton, N. J.
 Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.
 Ever-Stay Metal Co.—See Ever-Stay Sales Co.
 Ever-Stay Sales Co., 1501 Jackson St., Omaha, Neb. (Sole Distributors for Ever-Stay Metal Co., Omaha, Neb. "SodLoom.")
 F. A. A.—See Albertus & Co.
 Federal Mfg. Co., 27 Haymarket Sq., Boston, Mass. "Supreme."
 Gardiner & Co., G., 7405 Superior Ave., Cleveland, O.
 Hayman & Co., Michael, 856 E. Ferry St., Buffalo, N. Y.
 Hercules Mfg. Co., 105 W. 40th St., New York, N. Y. (See page 673.)
 Howard Metal Co., Second & Canal Sts., Reading, Pa.
 Ideal Bronze Co., 1205-09 E. 55th St., Cleveland, O. (See page 205.)
 Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.
 Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.
 Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."
 Janney-Stellamets & Co., Philadelphia, Pa. (See page 937.)
 Langsenkamp, F. H., 130 Shelby St., Indianapolis, Ind.
 Lester Co., Fayetteville, N. Y. "Arrow."
 Lewis & Bros. Co., John T., 437 Chestnut St., Philadelphia, Pa.
 Mackenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Silverline."
 Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.
 Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.
 Minco's—See Austin & Co.
 More-Jones Brass & Metal Co., 3182-84 N. Broadway, St. Louis, Mo.
 Motex—See Jacobson & Sons Co.
 National Products Co., Kokomo, Ind.
 Naulty, James, 2634 N. 11th St., Philadelphia, Pa.
 Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 269.)
 Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."
 Richards & Co., 300-04 Causeway St., Boston, Mass. "Rico."
 Rico—See Richards & Co.
 Rinehart—See Pittsburgh White Metal Co.
 Sasco—See Smith Aluminum Solder Mfg. Co.
 Seaboard Metal Corp., 221 Randolph Ave., Jersey City, N. J.
 Semper Idem—See Wildes Son.
 Smith Aluminum Solder Mfg. Co., 1425 N. Felton St., Philadelphia, Pa. "Sasco."
 So-Luminum Mfg. & Engineering Co., 1834 Broadway, New York, N. Y.
 Sod-Loom—See Ever-Stay Sales Co.
 Sterling Aluminum Solder Co., 501 Eleventh St., Brooklyn, N. Y.
 Supreme—See Federal Mfg. Co.
 Thwing, C. B., 445 N. Fifth St., Philadelphia, Pa.
 Transco—See Transmuted Metals Co.
 Transmuted Metals Co., 3334 Chicago Ave., Chicago, Ill. "Transco."
 Twentieth Century Co., 1023 Holmes St., Lansing, Mich.
 United Smelting & Aluminum Co., New Haven, Conn. "W. F."
 Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acme."
 Victory Aluminum Solder Co., 1440 S. Michigan Ave., Chicago, Ill.
 W. F.—See United Smelting & Aluminum Co.
 Wensley Metal Products Co., 18th & Blake Sts., Denver, Colo.
 Western Kelli-Metal Corp., 721 Grant St., Denver, Colo.
 Wildes Son, Thomas, 339 Fifth Ave., New York, N. Y. "Semper Idem."

Everything is listed under the **NOUN** or principal word

SOLDER, Bar and Wire

Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. (See page 647.)

Blatchford Co., E. W., 230 N. Clinton Ave., Chicago, Ill.

Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester," (See page 413.)

Columbia Smelting & Refining Works, Brooklyn, N. Y.

Dutch Boy—See National Lead Co.

Emetco—See Empire Metal Co.

Empire Metal Co., 320 E. Water St., Syracuse, N. Y. "Emetco."

4-A Products Co., 3103 Downing St., Denver, Colo. "Mendall." (See page 861.)

Gardiner Metal Co., 1368 W. Lake St., Chicago, Ill.

Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.

Hoyt Metal Co., 300 N. Broadway, St. Louis, Mo. (See page 201.)

Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."

Kester—See Chicago Solder Co.

Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.

Lisberger & Son, Marks, 281 Borden Ave., Long Island City, N. Y.

MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Silverine."

Mendall—See 4-A Products Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa.

Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.

Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.

More-Jones Brass & Metal Co., 2132-44 N. Broadway, St. Louis, Mo.

National Lead Co., 111 Broadway, New York, N. Y. "Dutch Boy." (See page 211.)

North American Smelting Co., 900 W. Thompson, St., Philadelphia, Pa.

Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."

Richards & Co., 200-06 Causeway St., Boston, Mass.

Rinehart—See Pittsburgh White Metal Co.

Semper Idem—See Wildes Son.

Silverine—See MacKenzie-Waterhouse Co.

Taylor Co., N. & G., 303 Chestnut St., Philadelphia, Pa.

United American Metals Corp., 192 Diamond St., Brooklyn, N. Y.

Victory—See Kahn Bros.

Wildes Son, Thomas, 339 Fifth Ave., New York, N. Y. "Semper Idem."

SOLDER, SELF FLUXING—See Solder, Bar and Wire

SOLDER, WIRE—See Solder, Bar and Wire

SOLDERING ACID—See Flux, Soldering

SOLDERING FLUID—See Flux, Soldering

SOLDERING FLUX—See Flux, Soldering

SOLDERING FURNACES—See Furnaces, Soldering

SOLDERING IRONS, COPPER—See Irons, Copper Soldering

SOLDERING PASTE—See Flux, Soldering

SOLDERLESS COUPLINGS—See Unions, Tubing

SOLDERLESS FITTINGS—See Unions, Tubing

SOLID TIRES—See Tires, Solid

SOLID WRENCHES—See Wrenches, Nut and Bolt

SOLUTIONS, RUST PREVENTING—See Compounds, Rust Preventing and Removing

SPADES and Shovels, Collapsible

(For carrying on car when touring)

Barnard Specialty Co., 2800 Maple Ave., Los Angeles, Cal.

Ideal Mfg. Co., 14th & Harrison Sts. (North Kansas City), Kansas City, Mo.

Nostuk Mfg. Co., 2124 N. Clark St., Chicago, Ill.

Waynesburg Pressed Steel Co., Waynesburg, Pa.

Wood Shovel & Tool Co., Piqua, O.

Wyoming Shovel Works, Wyoming, Pa.

SPANNERS, BOLT—See Wrenches, Nut and Bolt

SPARE TIRE COVERS—See Covers, Spare Tire

SPARE TIRE HOLDERS—See Holders, Tire

SPARE TIRE LOCKS—See Locks, Spare Tire

SPARE WHEELS—See Wheels, Special

SPARE WHEELS, WRECKING—See Trucks, Castors and Spare Wheels, Wrecking

SPARK ARRESTERS—See Arresters, Tractor Spark

SPARK COIL BOXES—See Boxes, Spark Coil

SPARK COILS—See Coils, Spark

SPARK GAPS—See Gaps, Spark

SPARK INDICATORS—See Gaps, Spark

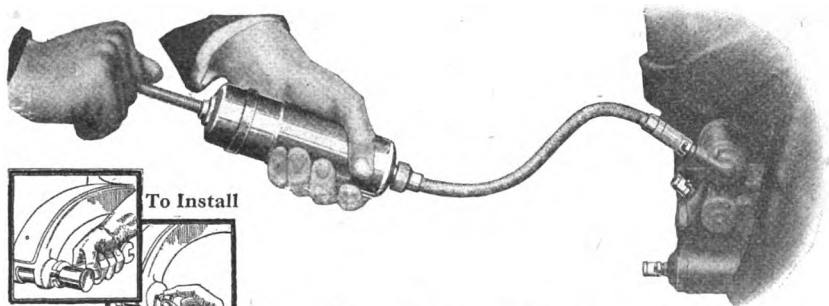
SPARK LEVER GRIPS—See Grips, Throttle

SPARK LEVER LOCKS FOR FORDS—See Locks, Spark Lever

Everything is listed under the NOUN or principal word

ALEMITE

High Pressure Lubricating System



First This

To Install



Then This



BASSICK LUBRICANT

A high grade grease. Free from all impurities. Patented container for quickly and easily filling the Alemite Compressor.



BASSICK Shur-Lite CIGAR LIGHTER

A wireless, handy cigar lighter that plugs in from the instrument board. Ready for use in a jiffy.



BASSICK GAS-CO-LATOR

Filters the gasoline upward through channels just before it reaches the carburetor. Removes all other impurities.



BASSICK Penetrating Oil

For squeaky springs. Spreads and penetrates to every part. Dissolves rust instantly and leaves a film of dry graphite, which lubricates and prevents the formation of further rust.

Positive Lubrication In Less Than 30 Minutes

ALEMITE eliminates all the drudgery of under-car greasing, and the dirt and muss of oil or grease cups.

ALEMITE forces clean, wear-saving grease into the bearing, under a pressure of 500 pounds if necessary, pushing out all the old, grit-laden grease. Every chassis bearing can be lubricated in less than 30 minutes.

ALEMITE is easily installed by anyone, and operation is equally simple. Just attach the flexible steel hose and turn the compressor handle.

ALEMITE is made up in sets ready to install on any size car, truck or tractor. Nearly 200 leading manufacturers of cars, trucks and tractors have adopted the ALEMITE High Pressure Lubricating System as standard equipment.

Ask your dealer, garage or repair man or write the nearest distributor listed below.

THE BASSICK MANUFACTURING COMPANY
361 WEST SUPERIOR STREET CHICAGO, ILL.

Address Alemite Lubricator Company, at address below:

Baltimore, Md. 106 W. Mt. Royal Ave.
Boston, Massachusetts 35 Cambridge St.
Bridgeport, Conn. 577 Fairfield Ave.
Buffalo, New York 906 Main St.
Butte, Montana 55 W. Granite St.
Calgary, Alta. Can. 216 12th Ave. W.
Alemite Lubricator Co. of Can. N. W.
Charleston, S. Carolina 197 King St.
Chicago, Ill. 2641 S. Michigan Ave.
Cleveland, Ohio 4812 Euclid Ave.
Dallas, Texas 408 S. Ervay St.
Denver, Colorado 1245 Broadway
Detroit, Mich. 4750 Woodward Ave.
Des Moines, Ia. 1727 W. Grand Ave.

El Paso, Tex. 403 Texas St.
 Fargo, N. Dak. 324 N. Pacific Ave.
 Indianapolis, Ind. 425 N. Meridian St.
 Jacksonville, Fla. 904 Main St.
 Kansas City, Mo. 1506 McGee St.
 Los Angeles, Cal. 1138 S. Figueroa St.
 Louisville, Ky. 543 South Third St.
 Milwaukee, Wis. 465 Broadway
 Minneapolis, Minn. 208 S. Tenth St.
 Montreal, Can. 321 St. James St.
 John Millen & Son, Ltd.
 Newark, N. J. 229-230 Halsey St.
 New Orleans, La. 537 St. Charles St.
 New York 1780 Broadway *See Below

Omaha, Neb. 2864-66 Farnam St.
 Philadelphia, Pa. 824 N. Broad St.
 Portland, Ore. Tenth and Oak Sts.
 St. Louis, Mo. 2822-24 Locust St.
 St. Paul, Minn. 231-35 W. Ninth St.
 Salt Lake City, Utah
 32-34 S. W. Temple St.
 San Francisco, Cal. 624 Van Ness Ave.
 Seattle, Wash. 312 East Pike St.
 Toronto, Canada. 53-57 Adelaide St.
 John Millen & Son, Ltd.
 Sidney, Australia. Bennett & Wood
 Isle of Malta. Mammo Bros.
 Johannesburg, S. Africa
 Williams & Hunt

*The Bassick Service Corp., 1780 Broadway

Please mention The Automobile Trade Directory

SPARK PLUG BRUSHES—See Brushes, Spark Plug

SPARK PLUG BUSHINGS—See Bushings, Spark Plug Testing

SPARK PLUG CASES—See Cases, Spark Plug

SPARK PLUG CLEANERS—See Cleaners, Spark Plug

SPARK PLUG MICA—See Mica

SPARK PLUG POINT PROTECTORS—See Protectors, Spark Plug Point

SPARK PLUG PORCELAINS—See Porcelain

SPARK PLUG SWITCHES—See Switches, Spark Plug

SPARK PLUG TERMINALS—See Terminals, Wire

SPARK PLUG TESTERS—See Testers, Spark Plug

SPARK PLUG WRENCHES—See Wrenches, Nut and Bolt

SPARK PLUGS—See Plugs, Spark

SPARK POINTS—See Points, Sparking

SPARK RETARDERS FOR FORDS—See Retarders, Automatic Spark

SPARK TIMERS—See Timers, Ignition

SPARK AND THROTTLE ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Spark and Throttle Rod

SPEAKING TUBES—See Tubes, Speaking

SPEED CHANGE GEARS—See Gears, Transmission

SPEED CHANGE LEVERS—See Levers, Brake

SPEED CONTROLLERS—See Governors, Gasoline Engine

SPEED INDICATORS, AIRPLANE—See Indicators, Airplane Speed

SPEED INDICATORS, TRACTOR—See Indicators, Tractor Engine Speed

SPEED METERS—See Speedometers

SPEEDOMETER DIALS—See Dials, Luminous

SPEEDOMETER GEARS—See Gears and Pinions, Speedometer

SPEEDOMETER JOINTS—See Joints, Speedometer Swivel

SPEEDOMETER LAMPS—See Lamps, Electric Dash

SPEEDOMETER LAMPS FOR FORDS—See Lamps, Electric Speedometer

SPEEDOMETER PINIONS—See Gears and Pinions, Speedometer

SPEEDOMETER REPAIR PARTS—See Parts, Speedometer Repair

SPEEDOMETER SHAFT LUBRICATORS—See Lubricators, Speedometer Shaft

SPEEDOMETERS

ASR—See Auto Speed Recording Co.
Auto Speed Recording Co., 3936 Lincoln Ave.
Chicago, Ill. "ASR."

Champion Ignition Co., Flint, Mich.
(See page 725.)

Corbin Brown—See Corbin Screw Corp.
Corbin Screw Corp., High St., New Britain,
Conn. "Corbin Brown."
Detroit Instrument Co., 251 E. Jefferson Ave.
Detroit, Mich.

General Speedometer Repair Co., 119-21
W. 63rd St., New York, N. Y. (Dealers.)
(See page 871.)

Hamilton Corp., Columbia Ave., Lancaster, Pa.
Johns-Manville Co., H. W., Madison Ave. &
41st St., New York, N. Y.
Smith & Sons, S., 154 Nassau St., New
York, N. Y. (See page 253.)

Standard Thermometer Co., 65 Shirley
St., Roxbury, Mass. (See page 871.)
Stewart-Warner Speedometer Corp., Chi-
cago, Ill. (See page 1063.)

Troy Carriage Sun Shade Co., Troy, O.
Veeder Mfg. Co., 22 Sargeant St., Hart-
ford, Conn. (See page 649.)
Waltham Watch Co., Waltham, Mass.

SPEEDOMETERS, for Fords

ASR—See Auto Speed Recording Co.
Auto Speed Recording Co., 3936 Lincoln Ave.
Chicago, Ill. "ASR."

Corbin Screw Corp., High St., New Britain,
Conn.

Johns-Manville Co., H. W., Madison Ave. &
41st St., New York, N. Y.

Simplex Co., 1 Beacon St., Boston, Mass.
Standard Thermometer Co., 65 Shirley
St., Roxbury, Mass. (See page 871.)
Stewart-Warner Speedometer Corp., Chi-
cago, Ill. (See page 1063.)

SPHERICAL BALLOONS—See Balloons,
Spherical

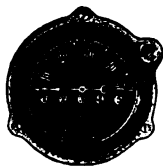
SPINDLE ARM SILENCERS FOR FORDS
—See Anti-Rattlers, Spindle Arm

Everything is listed under the NOUN or principal word

STANDARD SPEEDOMETER

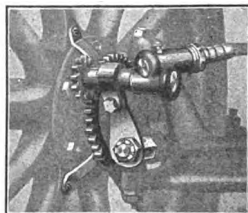
MODEL 505

FITS ALL STARTER EQUIPPED FORDS



MR. DEALER: Learn about this model! Our descriptive circular tells you about the attractive design, how we obtained necessary offset with our Angular Stem, and how installation is made easy through simplicity of design. The relative value of a good drive to the speedometer is also brought home to you, and you learn in a few minutes why the STANDARD SPEEDOMETER is such a good selling proposition.

Standard Thermometer Co.
65 Shirley St. Roxbury, Mass.



*They've Simply
Got to be Right.*

HUMASON SPRINGS

SCREW MACHINE PRODUCTS

OUR plant, newly equipped with highly accurate and very speedy machines, is specialized for the uninterrupted production of springs and screw machine products on a large scale.

We can handle promptly contracts for all kinds of springs up to $\frac{3}{4}$ " stock, and screw machine products up to 1" in diameter in any quantity.

Let us take care of you.

THE HUMASON MFG. COMPANY

Division A, FORESTVILLE, CONN.

Detroit Representative: S. T. Gorman, 1013 Dime Bank Building
New York City Representative: C. A. Hubbs, 50 Church Street

SPEEDOMETER REPAIRS AND PARTS

119-121 West 63rd St. Tel., Col. 8529

80 Central Ave. Tel., Market 1781

New York City

Newark, N. J.

OFFICIAL SALES AND SERVICE STATION

VAN SICKLEN } SPEEDOMETERS (WALTHAM
CORBIN-BROWN } (STANDARD

REPAIRS AND REPAIR PARTS FOR

STEWART
JONES
SEARS-CROSS

} SPEEDOMETERS

{ WARNER
JOHNS-MANVILLE
HOFFECER

{ KLAXON
NEWTONE
LONG
E. A.

} HORNS

{ SPARTON
STEWART
SAMPSON
TROJAN

Same Discount as Quoted by Manufacturer

We Carry a Complete Line of New Speedometers for all Cars

GENERAL SPEEDOMETER REPAIR CO., INC.

Please mention The Automobile Trade Directory

**SPINDLES, Emergency Rear Axle,
for Fords**

Hinckley-Myers Co., Water St., Jackson, Mich.

Kraeuter & Co., Newark, N. J.
(See page 1001.)

Shambaugh Mfg. Co., Lafayette, Ind.

Slipon Co., 207 Farwell Ave., Milwaukee, Wis.

SPINDLES, FRONT WHEEL, FOR FORDS

—See Spindles, Special Front Wheel

**SPINDLES, Special Front Wheel—
For Fords**

Mospico—See Motor Spindle Corp.

Motor Spindle Corp., 93 E. Jefferson Ave., Detroit, Mich. "Mospico."
(See page 655.)

SPIRAL WIRE BELTS—See Belts, Spiral Wire

SPLASH PANS FOR FORDS—See Pans, Radiator Splash

SPOKE TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

SPOKES, Wire

Kalamazoo Spoke & Nipple Co., Kalamazoo, Mich.

Maryland Metal Products Co., Hagerstown, Md.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Standard Co., Torrington, Conn.

Wire Goods Co., 23 Union St., Worcester, Mass.

SPONGES and CHAMOIS

American Sponge & Chamolis Co., 47 Ann St., New York, N. Y. "Mermaid."

Bel Jan-Tan—See Hart Export Co.

Bloch, Joseph, 51 Cliff St., New York, N. Y. (Importer.)

Bloch & Sons, A., 101 Barclay St., New York, N. Y.

Carbondale Sponge Co., 73 Warren St., New York, N. Y. (Importers.)

Chamoline—See Van Schaack & Sons.

Colossus—See Rhodes & Co.

Consumers Sponge Co., 675-85 S. Salina St., Syracuse, N. Y. "Usaspong."

Davis & Sons, D., 45 Warren St., New York, N. Y. (Importers.) "Vel Volla."

Florida Sponge & Chamolis Co., 73 Gold St., New York, N. Y. (Importers.)

Frierlich & Mansell, 74 Grand St., New York, N. Y. (Importers.)

Fuchs Co., Max, 244 Pearl St., New York, N. Y.

Greek-American Sponge Co., 300 W. Randolph St., Chicago, Ill. (Importers.)

Hart Export Co., 366 Fifth Ave., New York, N. Y. "Bel Jan-Tan."

Isaacs Co., A., 58 Beekman St., New York, N. Y.

Louden & Hill, 624 Arch St., Philadelphia, Pa.

Mermaid—See American Sponge & Chamolis Co.

Miami Drug Co., Miami, Fla.

Nassau Sponge Co., 232 W. Lake St., Chicago, Ill.

National Sponge & Chamolis Co., 153 William St., New York, N. Y. (Importers.)

Niehaus Co., Jos., 841 W. Fourth St., Cincinnati, O. (Importers.)

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. (Importers.) "Colossus."

Smith, Kilne & French Co., 429 Arch St., Philadelphia, Pa.

Usaspong—See Consumers Sponge Co.

Van Schaack & Sons, Peter, 114-18 W. Lake St., Chicago, Ill. "Chamoline."

Vel Volla—See Davis & Sons.

Western Robe Mills, 24 E. Eighth St., Chicago, Ill. (Importers.)

SPOOL SILK—See Silk, Spool

SPOT LAMPS—See Lights, Spot

SPOTLIGHT EXTENSION HANDLES—See Handles, Extension Spotlight

SPOTLIGHTS—See Lights, Spot

SPRAGS, RATCHET, FOR FORDS—See Stops, Ratchet

SPREADERS, RIM—See Tools, Demountable Rim Contracting.

SPREADERS, SPRING LEAF—See Tools, Spring Leaf

SPREADERS, TIRE—See Tools, Tire

SPRING BELTS—See Belts, Spiral Wire

SPRING BOLTS—See Bolts, Spring Shackle

SPRING BUMPERS—See Bumpers, Spring

SPRING CLIPS—See Clips, Spring

SPRING CONNECTING TOOLS, TRANSMISSION BAND FOR FORDS—See Tools, Transmission Band Spring Connecting

SPRING COTTERS—See Pins, Cotter

SPRING ENGINE STARTERS FOR FORDS—See Starters, Mechanical or Spring Engine

SPRING HANGERS FOR FORDS—See Hangers, Spring

SPRING LEAF LUBRICATING COVERS—See Cups and Covers, Spring Leaf Lubricating

SPRING KEY PRIMING CUPS—See Cups, Spring Key Priming

SPRING LEAF LUBRICATING CUPS—See Cups and Covers, Spring Leaf Lubricating

SPRING LEAF LUBRICATING STRIPS—See Strips, Spring Leaf Lubricating

SPRING LEAF OIL CUPS—See Cups and Covers, Spring Leaf Lubricating

Everything is listed under the NOUN or principal word

BURGESS CHECKERS

*Simplest, Most Efficient
Rebound Control
at Lowest Cost*

for FORDS

Other Types Later

Something entirely new. Replace regular Ford spring shackles in front and rear. No coil springs—nothing to weaken or wear out. Full set can be installed in 30 minutes.

\$10—Set of 4

*Write us for further
information*

WALTER S. BURGESS MFG. CO.
500 Sterling St., St. Joseph, Mich.

"American" Leaf Springs

for

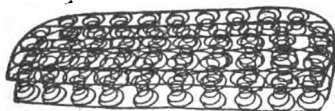
**Passenger Cars
Motor Trucks
Tractors**

We are now ready to solicit
inquiries and orders from all
Automotive Vehicle
Manufacturers

American Autoparts Co.
DETROIT, MICH.

THE WING PATTERN CUSHION SPRING

shown below is used by all the leading manufacturers of Automobiles in the East and has stood the test of ten years' service with satisfaction alike to makers of Cars as well as users.



Cushion Spring (Wing Pattern) for Auto Seats

Manufactured by

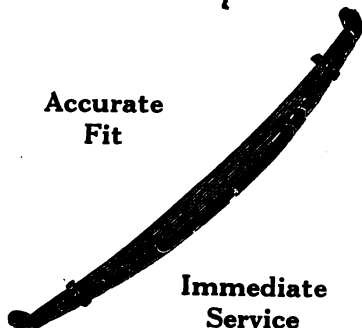
THE CHARLES WING CO.

Amesbury, Mass., U. S.

Wholesale Distributors of aluminum sheets and mouldings, also manufacturers and wholesale dealers in all classes of automobile upholstery leather, and other materials.

Champion Springs For Replacement

Accurate
Fit



Immediate
Service

**Champion Auto
Spring Company**

3141-3149 Pine Street
St. Louis, Missouri

SPRING LEAF OILERS—See Cups and Covers, Spring Leaf Lubricating

SPRING LEAF SEPARATING TOOLS—See Tools, Spring Leaf Separating

SPRING LIFTING TOOLS—See Tools, Valve Spring Lifting and Compressing

SPRING LUBRICANTS—See Lubricants, Spring

SPRING LUBRICATORS—See Lubricators, Spring and Shackle Bolt

SPRING OILERS—See Cups and Covers, Spring Leaf Lubricating

SPRING OILING BOXES—See Cups and Covers, Spring Leaf Lubricating

SPRING REPAIR CLAMPS—See Clamps, Spring Repair

SPRING SHACKLE BOLTS—See Bolts, Spring

SPRING SPREADERS—See Tools, Spring Leaf Separating

SPRING STARTERS FOR FORDS—See Starters, Mechanical or Spring

SPRING STEEL—See Steel, Spring

SPRING STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening

SPRING SUPPORT CLAMPS—See Clamps, Special Cantilever Spring Support

SPRING TESTING MACHINES—See Machines, Spring Testing

SPRING WASHERS—See Washers, Steel Spring; also Nuts and Washers, Lock

SPRING WHEELS—See Wheels, Special

SPRING WIRE—See Wire, Steel Spring

SPRINGS, CHAIN TIGHTENING—See Tighteners, Tire Chain

SPRINGS, COIL—See Springs, Machinery

SPRINGS, CUSHION—See Springs, Seat

SPRINGS, DUMMY FRONT, FOR FORDS—See Extensions, Dummy Frame

SPRINGS, ENGINE VALVE—See Springs, Machinery

SPRINGS, Engine Valve, for Fords

Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

U. S. Metal Goods Co., 5311 Euclid Ave., Cleveland, O. (see page 745.)

SPRINGS, Leaf

Alloy Steel Spring Co., Jackson, Mich.

American Autoparts Co., 1807 Gratiot Ave., Detroit, Mich. (See page 873.)

American Spiral Spring & Mfg. Co., 16th & Butler Sts., Pittsburgh, Pa.

Anchor—See Sheldon Axle & Spring Co.
Beams Spring Co. (Columbia Heights), Massillon, O.

Better—See New Era Spring & Specialty Co.
Betts Spring Co., 233 Folsom St., San Francisco, Cal.

Buckeye Spring Works, 1919 Race St., Cincinnati, O.

Buffalo Automobile Spring Co., 146 Virginia St., Buffalo, N. Y. (See page 881.)

C. G. Spring Co., Kalamazoo, Mich. (See page 881.)

Cambria Spring Co., 916-18 S. Los Angeles St., Los Angeles, Cal.

Champ Spring Co., 2107 Chouteau Ave., St. Louis, Mo.

Champion Auto Spring Co., 3141-49 Pine St., St. Louis, Mo. (See page 873.)

Cooper Spring Co., Leader News Bldg., Cleveland, O.

Delany & Son, D., 214 Liberty St., Newark, N. J.

Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich. (See page 463.)

Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit, Mich.

Diamond—See Terre Haute Auto Spring Co.

Duer Spring & Mfg. Co., Pittsburgh, Pa.

E. C.—See Hoover Spring Co.

E. C. V.—See Hoover Spring Co.

Federal Parts Mfg. Co., 15 Second St. S. E., Minneapolis, Minn.

Garden City Spring Works, 2300 Archer Ave., Chicago, Ill.

Harvey Spring & Forging Co., 106A 17th St., Racine, Wis. (See page 929.)

Higgins Spring & Axle Co., Racine, Wis. "Quality."

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal. "E. C." "E. C. V."

Iron City Spring Co., Pittsburgh, Pa. (See page 899.)

Jenkins Vulcan Spring Co., Richmond, Ind. "Vulcan." (See page 863.)

Keystone Spring Works, 15th & Buttonwood Sts., Philadelphia, Pa.

Kimball—See Pittsburgh Auto Spring Co.

Laher Auto Spring Co., 34 N. 15th St., Portland, Ore.

Lewis Spring & Axle Co., 42 Holler St., Chelsea, Mich.

Liggett Spring & Axle Co., Monongahela, Pa.

Lyons Co., Edward F., 1600-34 E. Euclid Ave., Detroit, Mich.

Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 901.)

Mather Spring Co., Toledo, O. (See page 875.)

Merrill Spring Co., E. R., 524-23 W. 23th St., New York, N. Y.

National Spring Co., New Castle, Ind. "Stanley." (See page 1029.)

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."

Everything is listed under the NOUN or principal word

"The Spring Is the Thing"



MATHER SPRINGS

Scientifically Heat-Treated
designed to insure

Maximum of Elasticity & Endurance
with

Minimum of Vibration



Genuine made only by

The Mather Spring Company
Toledo, Ohio.

SPRINGS, Leaf (Continued)

Northwestern Spring Mfg. Co., 3716-28 University Ave., N. E., Minneapolis, Minn.

Olcese Lubricating Spring & Equipment Co., Otis Bldg., Chicago, Ill.

Palmer, Jos., 333 Rutherford Ave., Boston, Mass.

Penn Spring Works, Baldwinville, N. Y.

Perfection—See Standard Parts Co.

Philadelphia Spring Works, 1439 N. Hutchinson St., Philadelphia, Pa. "Tufstest."

Pittsburgh Auto Spring Co., 5915 Centre Ave., Pittsburgh, Pa. "Kimball."

Quality—See Higgins Spring & Axle Co.

Rowland, William & Harvey, Philadelphia, Pa.

Service Spring Co., 735 St. Paul St., Indianapolis, Ind.

Sheldon, Axle & Spring Co., Wilkes-Barre, Pa. "Anchor."

Shunk Mfg. Co., Bucyrus, O.

Spring Perch Co., Long Brook Ave., Stratford, Conn.

Stan-Par—See Standard Parts Co.

Standard Parts Co., Cleveland, O. "Stan-Par," "Perfection." (See page 283.)

Standard Steel Spring Co., Coraopolis, Pa.

Stanley—See National Spring Co.

Sterling Spring Co., 2148-62 Scranton Rd., Cleveland, O.

Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 877.)

Terre Haute Auto Spring Co., Terre Haute, Ind. "Diamond."

Titanic—See Tuthill Spring Co.

Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.

Triple Action Spring Co. of New York, 549 W. 59th St., New York, N. Y.

Troy Spring Works, 394-96 Congress St., Troy, N. Y.

Tufstest—See Philadelphia Spring Works.

Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 879.)

Vulcan—See Jenkins Vulcan Spring Co.

SPRINGS, Leaf, for Fords

(Including elliptic, semi-elliptic and cantilever springs to replace regular springs)

Buffalo Automobile Spring Co., 146 Virginia St., Buffalo, N. Y. (See page 881.)

E. C.—See Hoover Spring Co.

E. C. V.—See Hoover Spring Co.

Garden City Spring Works, 2800 Archer Ave., Chicago, Ill. "Raleo."

M. L. G. Co.—Universal Sales Co.

Higgins Spring & Axle Co., Racine, Wis. "Quality."

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal. "E. C." "E. C. V."

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Saver."

Quality—See Higgins Spring & Axle Co.

Raleo—See Garden City Spring Works.

Saver—See New Era Spring & Specialty Co.

Shunk Mfg. Co., Bucyrus, O.

Superior Steel Spring Co.—See Zinke Co.

Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 877.)

Titanic—See Tuthill Spring Co.

Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.

Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 879.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Superior Steel Spring Co., Mt. Clemens, Mich.)

SPRINGS, Machinery or Coil

Advance Spring & Wire Co., 1749-55 Carroll Ave., Chicago, Ill.

Aero—See Detroit Spring Co.

American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.

American Spiral Spring & Mfg. Co., 56th & Butler Sts., Pittsburgh, Pa.

American Spring & Mfg. Corp., Holly, Mich.

American Steel & Wire Co., Chicago, Ill. (See page 819.)

Barnes Co., Wallace, Bristol, Conn.

Cary Spring Works, 240 W. 29th St., New York, N. Y.

Chatillon & Sons, John, 85-93 Cliff St., New York, N. Y.

Chicago Coil Spring Co., 328 N. Albany Ave., Chicago, Ill.

Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.

Cook Spring Co., 420 E. 106th St., New York, N. Y.

Cuyahoga Spring Co., 16612 Waterloo Rd., Cleveland, O. (See page 877.)

D'Arcy Spring Co., Kalamazoo, Mich. (See page 897.)

Detroit Spring Co., 406 W. Jefferson Ave., Detroit, Mich. "Aero."

Duer Spring & Mfg. Co., Pittsburgh, Pa.

Dunbar Bros. Co., 80 South St., Bristol, Conn.

Eagle—See Miller & Van Winkle.

Eureka Spring Co., 150 Bleeker St., New York, N. Y.

Fischer Spring Co., Chas., 473 Kent Ave., New York, N. Y.

Gardner Wire Co., 5648 Race Ave., Chicago, Ill.

General Spring & Wire Co., 1930 Marston Ave., Detroit, Mich.

Gibson Co., William D., 1802 Clybourn Ave., Chicago, Ill. (See page 917.)

Hebb, George A., 70 William St., Newark, N. J.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 897.)

Humason Mfg. Co., Division A, Forestville, Conn. (See page 871.)

Kokomo Spring Co., Kokomo, Ind.

Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."

Mitchell Spring Works, W. G., Johnstown, Pa.

Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.

New York Wire & Spring Co., P. O. Box 1043, Hoboken, N. J. (See page 877.)

Peck Spring Co., Plainville, Conn.

Railway Steel-Spring Co., 30 Church St., New York, N. Y.

Raymond Mfg. Co., W. Church St., Cortt, Pa.

Reliance Spring & Mfg. Co., 3911 Second St., Brooklyn, N. Y.

Sabin Machine Co., Montpelier, Vt.

Tuck Mfg. Co., 74 Ames St., Brockton, Mass.

Wilson, Robert P., 20 Clinton St., Newark, N. J.

Everything is listed under the NOUN or principal word

Springs

One of your many annoying problems
—our only job

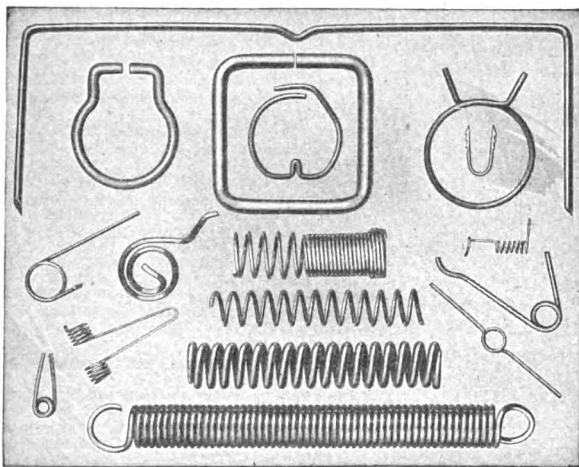
Tell us what your springs must do

New York Wire & Spring Co.
P. O. Box 1043, Hoboken, N. J.



SPRINGS

For Every Automotive Purpose



Whether you make automobiles, motor trucks or tractors, or the units that form the complete vehicle, we can supply you with any design of coil spring, to suit your needs.

Our Engineering Department is solving, new and different spring problems every day—write us your requirements.

**The CUYAHOGA
SPRING COM-
PANY**

16612 Waterloo
Road
Cleveland Ohio

TEMME QUALITY SPRINGS

For all makes of Automobiles and Trucks

TEMME Quality is the acknowledged replacement spring leader for Service and Endurance. Made up in direct accordance with manufacturer's original specifications. Constructed of the highest grade crucible steel, treated and oil tempered. The regular stock of 200,000 springs for all makes and models of cars enables us to make immediate shipment—no delays. The PRICE of the TEMME QUALITY SPRING is lower than made by the car manufacturers. 6000 Official SERVICE STATIONS in U. S. Also HOME of the TEMME SHOCK ABSORBER and the TEMME AUTOMOBILE EXHAUST HEATER. Literature supplied on application.

(Dealers—Write at once for our profitable selling proposition)

TEMME SPRING CORPORATION

2810-12 SO. MICHIGAN BLVD., CHICAGO, ILL.

Please mention The Automobile Trade Directory

SPRINGS, Machinery or Coil (Continued)

Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 649 and 819.)

SPRINGS, Seat or Upholstery

Aero—See Detroit Spring Co.
 American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
 American Cushion Spring Co., Kalamazoo, Mich.
 American Steel & Wire Co., Chicago, Ill. (See page 819.)
 Barber Mfg. Co., 1818 Brown St., Anderson, Ind.
 Black Velvet—See National Spring & Wire Co.
 Champion—See Wing Co.
 Chicago Coil Spring Co., 328 N. Albany Ave., Chicago, Ill.
 D'Arcy Spring Co., Kalamazoo, Mich. (See page 897.)
 Dean Wire Goods Co., 130 Austin Ave., Worcester, Mass.
 Detroit Spring Co., 406 W. Jefferson Ave., Detroit, Mich. "Aero."
 Eagle—See Miller & Van Winkle.
 Excelsior—See Trenton Spring Mattress Co.
 Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. (See page 329.)
 Gibson Co., William D., 1803 Clybourn Ave., Chicago, Ill. (See page 917.)
 Globe Furniture Co., Northville, Mich.
 Hamm Clutch Spring Co., 115 N. Main St., Piqua, O.
 Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
 Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.
 Kelley & Co., E., 561 Main St., Worcester, Mass.
 Kokomo Spring Co., Kokomo, Ind.
 Lace Web—See Trenton Spring Mattress Co.
 Marshall Ventilated Mattress Co., 1454 S. Sangamon St., Chicago, Ill.
 Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."
 Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.
 Nachman Springfilled Co., 2241-53 S. Halsted St., Chicago, Ill.
 National Spring & Wire Co., Monroe & Mulberry Sts., Union, Mich. "Black Velvet." "Rocky Road."
 Reynolds Spring Co., Jackson, Mich. "Rough Rider." (See page 1051.)
 Rocky Road—See National Spring & Wire Co.
 Rough Rider—See Reynolds Spring Co.
 Sagless Auto Seat Co., 2310 S. Wabash Ave., Chicago, Ill.
 Simmons Mfg. Co., Kenosha, Wis.
 Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
 Staples & Hanford Co., Newburgh, N. Y.
 T. C. I.—See Trenton Spring Mattress Co.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Trenton Spring Mattress Co., Parker Ave., Trenton, N. J. "T. C. I." "Lace Web."
 Vincent-McCall Co., Market & Howland Sts., Kenosha, Wis.
 Wickwire Spencer Steel Corp., Worcester, Mass. (See pages 649 and 819.)
 Wing Co., Charles, Amesbury, Mass. "Champion." (See page 873.)

Young Industries, L. A., 9200 Russell St., Detroit, Mich.

SPRINGS, STEERING GEAR—See Checks, Steering Gear**SPRINGS, Supplementary**

(See also Shock Absorbers; also Straps, Rebound)
 A. C. Mfg. Co., 2351 W. Grand Ave., Chicago, Ill.
 Alspring Shock Absorber Mfg. Co., Minneapolis, Minn. (See page 1007.)
 Alta—See Temco Electric Motor Co.
 Auto Accessory Mfgy., 34 Depot St., Canisteo, N. Y. "Eureka."
 Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
 Brock Shock Absorber Co., Los Angeles, Calif.
 Buckeye—See Central Brass & Fixture Co.
 C-C—See Cox Brass Mfg. Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Cox Brass Mfg. Co., Albany, N. Y. "Coxa-justo." "C-C." (See page 171.)
 Coxa-justo—See Cox Brass Mfg. Co.
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)
 Curtis—See Garden City Spring Works.
 Dennis Shock Absorber Co., Waukesha, Wis.
 Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis, Minn.
 Eureka—See Auto Accessories Mfgy.
 Falkenhainer & Co., 313 Carr St., St. Louis, Mo. "Ri-D-Z."
 Featheride—See Roche Electric Mfg. Co.
 Fernald Shock Absorbing Spring Suspension Co., 170 Summer St., Boston, Mass.
 Garden City Spring Works, 2300 Archer Ave., Chicago, Ill. "Curtis."
 Halladay, Co., L. P., Decatur, Ill. (See page 171.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)
 Hassler, Robt. H., 1050-61 Naomi St., Indianapolis, Ind.
 Headlight Support Co., 738 Woodward Ave., Detroit, Mich.
 J. M. Shock Absorber Co., 103 W. 52d St., New York, N. Y.
 Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Steel Wings Co., Chicago, Ill.)
 Johnson—See Temme Spring Corp.
 K. T. Lever Spring Co., 333 W. 70th St., New York, N. Y.
 Kim Mfg. Co., Merrimac, Mass.
 McGregor—See U. S. Auto Bumper Co.
 Marvel Machinery Co., Minneapolis, Minn. (See pages 623 and 717.)
 Nash Shock Absorber Co., Indianapolis, Ind. (See page 341.)
 Northwestern Spring Mfg. Co.—See United Sales Co.
 Nozal Co., 29 S. Clinton St., Chicago, Ill.
 Premier Cushion Spring Co., 2724 E. Grand Blvd., Detroit, Mich.
 Ri-D-Z—See Falkenhainer & Co.
 Roche Electric Mfg. Co., 315-17 N. Division Ave., Grand Rapids, Mich. "Featheride."
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
 St. Louis Spring Co., 3042 Locust St., St. Louis, Mo.
 Steel Wings Co.—See Jessop & Thompson.

Everything is listed under the NOUN or principal word

TITANIC SPRINGS for Replacement

THESE DISTRIBUTORS CAN SUPPLY TITANIC SPRINGS

ALABAMA
Interstate Electric Co. of Alabama
Moore-Handley Hardware Co.
Atkinson-Tire & Auto Co.
Atkinson-Williams Hdw. Co.

ARKANSAS
Fort Smith Automotive Supply Co.
Crow-Burlingame Co.
Voss-Hutton Mfg. Co.
Benton County Hdw. Co.
Turner Auto Supply Co.

CALIFORNIA
Chanalor & Lyon Co.
Chanalor & Lyon Co.
Chanalor & Lyon Co.
COLORADO
Auto Equipment Co.

CONNECTICUT
Post & Lester Co.
Post & Lester Co.
Post & Lester Co.
Post & Lester Co.
Post & Lester Co.
DISTRICT OF COLUMBIA
F. P. May Hdw. Co.
Charles Rubel & Co.
Rudolph & West Co.

FLORIDA
G. Norman Baughman Co.
G. Norman Baughman Co.
G. Norman Baughman Co.

GEORGIA
Elyea Company
Osburn-Abston Co.

IDAHO
Bertram Motor Supply Co.
Salt Lake Hardware Co.

ILLINOIS
Automobile Supply Co.
Beckley-Halston Co.
Butler Brothers
Central Electric Co.

INDIANA
Hine-Watt Mfg. Co.
John C. Hoof Co.
E. D. Kimball & Co.
Motor Car Supply Co.
Sheridan Auto Supply, Inc.
Universal Automotive Supply Co.

ILLINOIS
Whittaker Mfg. Co.
E. R. Collins Co.
Barrett Hardware Co.
Natl. Elec. & Auto Sup. Co.
Reid Motor Supply Co.
Tenk Hardware Co.
Washington Auto Supply Co.

INDIANA
Orr Iron Company
R. M. Kaough Co.
W. J. Holliday & Co.
Power Supply Co.

IOWA
Robert Donahue Iron & Hdw. Co.
Cedar Rapids Pump & Supply Co.

MISSOURI
Sieg Company
Herring Motor Co.
Hippee-States Co.
John Ermdorff Iron Co.
Midwest Auto Supply Co.
Prusia Hardware Co.
Harper & McIntire
Sioux City Iron Co.
Wm. Warnock Co.
Repass Automobile Co., Inc.

KANSAS
Blash, Mize & Silliman Hdw. Co.
A. J. Harwi Hdw. Co.

MISSOURI
Goddard-White Co.
Ayers-Farmer Auto Supply Co.
Ross-Fraser Iron Co.
Robinson Heavy Hdw. Co.
Beck & Corbit Iron Co.
Fred Campbell Auto Supply Co.

MISSOURI
Campbell Iron Co.
Gellor, Ward & Hasner Hdw. Co.
Shapleigh Hdw. Co.
J. B. Slickles Saddlery Co.
Simmons Hardware Co.
Sligo Iron Store Co.
The Straus Co.
Ozark Motor & Supply Co.

NEBRASKA
W. M. Dutton & Sons Co.
Nebraska Bulck Auto Co.
Kopp Bros.
Paxton & Gallagher Co.
Powell Supply Co.
Western Auto. Supply Co.

NEBRASKA
The Frank Colladay Hdw. Co.
Lee Hardware Co.
Southwick Auto. Supply Co.
W. A. L. Thompson Hdw. Co.
Shattuck-George Co.

KENTUCKY
Andrew Cowan & Co., Inc.
Robinson Bros. & Co., Inc.
Electric Appliance Co.
Interstate Electric Co.
Interstate Electric Co.

LOUISIANA
New Orleans
New Orleans
Shreveport
MAINE
Portland
MARYLAND
Baltimore
Baltimore
Baltimore

MASSACHUSETTS
Boston
Springfield
Worcester
MICHIGAN
Detroit
Detroit
Detroit
Detroit
Escanaba
Flint
Grand Rapids
Port Huron

MINNESOTA
W. K. Supply Co.
W. K. Supply Co.
Southern Minnesota Motor Supply Co.
Automotive Supply Co.
Hennepin Hdw. Co.
W. S. Nott Co.
Plant Rubber Co.
Simmons Hdw. Co.
Western Motor Sup. Co.
Hackett, Gates, Hurty Co.
P. R. L. Hardenbergh & Co.
Minn. Harness Factory, Inc.
Auto Supply Co.

MISSOURI
Joplin Supply Co.
Sorber-Kuhn Auto Supply Co.
Bonniwell-Calvin Iron Co.
The Equipment Co.
Fash Co.
Harbison Mfg. Co.
Kansas City Auto. Supply Co.
Motor & Machinists Supply Co.
The Richards & Conover Hdw. Co.
Stowe Supply Co.
Townley Metal & Hdw. Co.

MISSOURI
Goddard-White Co.
Ayers-Farmer Auto Supply Co.
Ross-Fraser Iron Co.
Robinson Heavy Hdw. Co.
Beck & Corbit Iron Co.
Fred Campbell Auto Supply Co.

MISSOURI
Campbell Iron Co.
Gellor, Ward & Hasner Hdw. Co.
Shapleigh Hdw. Co.
J. B. Slickles Saddlery Co.
Simmons Hardware Co.
Sligo Iron Store Co.
The Straus Co.
Ozark Motor & Supply Co.

NEBRASKA
W. M. Dutton & Sons Co.
Nebraska Bulck Auto Co.
Kopp Bros.
Paxton & Gallagher Co.
Powell Supply Co.
Western Auto. Supply Co.

NEW JERSEY
W. T. Crane Carriage Hdw. Co.
NEW YORK
Albany Hardware & Iron Co.
Joseph Strauss Co., Inc.
W. E. Pruden Hdw. Co.

NEW YORK
Albany
Buffalo
New York City
Rochester
Syracuse
NORTH CAROLINA
Charlotte
Greensboro
Raleigh
NORTH DAKOTA
Fargo
Grand Forks

OHIO
Canton
Cincinnati
Cleveland
Columbus
Toledo
Toledo
Toledo
Youngstown

OKLAHOMA
McAllister
Oklahoma City
Portland
PENNSYLVANIA
Allentown
Huntington
Lancaster
Philadelphia
Pittsburgh
Scranton
Providence

RHODE ISLAND
Providence
SOUTH CAROLINA
Charleston
Florence
SOUTH DAKOTA
Aberdeen
Aberdeen
Huron
Sioux Falls

TENNESSEE
Chattanooga
Knoxville
Memphis
Nashville
TEXAS
Dallas
El Paso
Fort Worth
San Antonio

UTAH
Salt Lake City
VIRGINIA
Richmond
WASHINGTON
Seattle
Spokane
Tacoma

WEST VIRGINIA
Clarksburg
Huntington
Huntington
Wheeler
WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

WISCONSIN
Milwaukee
Milwaukee
Milwaukee
Milwaukee

TUTHILL SPRING COMPANY
Established 1880

760 Polk Street
Chicago, Illinois

TITANIC
Trade Mark Reg.

Please mention The Automobile Trade Directory

SPRINGS, Supplementary (Continued)

Stewart Mfg. Co., Oakland, Cal.
(See page 249.)
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 797.)
Temco Electric Motor Co., 921 Sugar St., Leipsic, O. "Alta."
Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson."
(See page 877.)
Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
Twin Spring Co., 61 Belvidere St., Boston, Mass.
U. S. Auto Bumper Co., 3021-23 Michigan Ave., Chicago, Ill. "McGregor."
U. S. E. Corp., 7 W. 61st St., New York, N. Y.
United Sales Co., 510 Temple Ct., Minneapolis, Minn. (Sole Distributors for Northwestern Spring Mfg. Co., Minneapolis, Minn.)
United States Spring Co., 1120-36 S. Los Angeles St., Los Angeles, Cal.
Velvet—See Blackledge Mfg. Co.

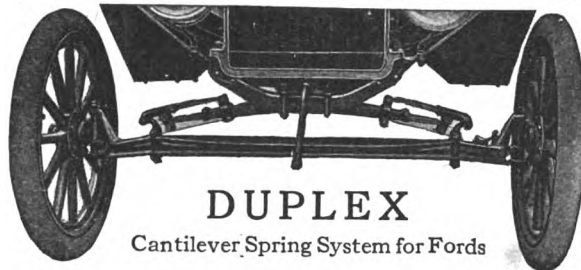
SPRINGS, Supplementary, for Fords

(See also Shock Absorbers; also Straps, Rebound)

Alford—See Hoffman Mfg. Co.
Alsprings Shock Absorber Mfg. Co., Minneapolis, Minn. (See page 1007.)
Alta—See Temco Electric Motor Co.
Altortor Bros. Co., Peoria, Ill. "Parnella."
Apco Mfg. Co., 703 Eddy St., Providence, R. I.
ARG Auxiliary Spring Co., Birmingham, Ala.
B B—See Bayne Mfg. Co.
Badger Mfg. Corp., Milwaukee, Wis.
(See page 171.)
Bayne Mfg. Co., Bushnell, Ill. "B. B."
(See page 669.)
Beckman Metal Products Co., 409 Superior Ave., N. W., Cleveland, O.
Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
Buckeye De Luxe—See Central Brass & Fixture Co.
Burgess Mfg. Co., Walter S., 500 Sterling St., St. Joseph, Mich. (See page 873.)
Burpee-Johnson Co., 1910 Singleton St., Indianapolis, Ind. "Float a Ford."
Carr Mfg. Co., 910 E. Main St., Hoopetown, Ill. "O. K."
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye De Luxe."
Champion Shock Absorber Sales Co., 913 N. Senate Ave., Indianapolis, Ind.
Comfort Shock Absorber Co., Hempstead, N. Y.
Cox Brass Mfg. Co., Albany, N. Y.
(See page 171.)
Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.
Dottl Mfg. Co., 128 S. Pinckney St., Madison, Wis.
Duplex Cantilever Spring Co., 173 N. Dearborn St., Chicago, Ill.
(See page 881.)
Eckhouse & Co., Walter, 610-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for P. H. Webber Co., Hoopetown, Ill. "W. & C.")
(See page opposite Title Page.)
Eclipse—See Kanestee Mfg. Co.

Fidelity Mfg. Co., 921 E. 15th St., Kansas City, Mo. "Hilliard."
Flexible Rider—See R. & R. Mfg. Co.
Flexlever—See Halladay Co.
Float a Ford—See Burpee-Johnson Co.
Fordeser—See Walker Mfg. Co.
Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. "Tri-Chek."
(See pages 172 and 173.)
Gildewell Mfg. Co., Richmond, Ind.
H. L. G. Co.—See Universal Sales Co.
H. & D. Co., Crawfordville, Ind.
(See page 1031.)
Halladay Co., L. P., Decatur, Ill. "Flex-lever," (See page 171.)
Handee—See Racine Handy Mfg. Co.
Harper Buggy Co., Columbia City, Ind.
Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 847.)
Hassler, Robt. H., 1050-61 Naomi St., Indianapolis, Ind.
Hilliard—See Fidelity Mfg. Co.
Hoffman Mfg. Co., Andrew, 5034-38 S. State St., Chicago, Ill. "Alford."
Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
J. M. Shock Absorber Co., 108 W. 52d St., New York, N. Y.
Johnson—See Temme Spring Corp.
K. S. Supply Co., 343 S. Dearborn St., Chicago, Ill.
Kanestee Mfg. Co., Main St., Canisteo, N. Y. "Eclipse."
Kim Mfg. Co., Merrimac, Mass.
King Washing Machine Co., Wolcott, Ind. "Winger Ride E-Z."
Landsheld Mfg. Co., 510 First Ave., West Haven, Conn.
Little Giant—See Republic Auto Parts Co.
Nash Shock Absorber Co., Indianapolis, Ind. (See page 341.)
O.K.—See Carr, H. G.
Parnella—See Altortor Bros. Co.
Pratt Mfg. Co., Wm. E., 35 W. Lake St., Chicago, Ill.
R. & R. Mfg. Co., 308 S. La Salle St., Chicago, Ill. "Flexible Rider."
Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Ridewell," "Little Giant."
Rex—See Volute Spring Shock Absorber Co.
Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill.
Ridewell—See Republic Auto Parts Co.
Sager Co., J. H., 36-38 S. Water St., Rochester.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "W. X." (See page 865.)
Steelbilt—See Walker Mfg. Co.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 797.)
Temco Electric Motor Co., 921 Sugar St., Leipsic, O. "Alta."
Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson."
(See page 877.)
Tri-Chek—See Gemco Mfg. Co.
Triple Action Spring Co. of New York, 549 W. 59th St., New York, N. Y.
Twin Spring Co., 61 Belvidere St., Boston, Mass.
U. S. E. Corp., 6-8 62d St., New York, N. Y.
Universal Sales Co., Chicago, Ill.

Everything is listed under the NOUN or principal word

DEMAND HEAVIER THAN EVER**DUPLEX**

Cantilever Spring System for Fords

Big business growing bigger. Ford owners taking better care of cars—insist on Duplex Cantilever System. Safest. Most satisfactory. Positive protection against rough road vibration. Only Cantilever System for Fords. Easily installed. Fully guaranteed. Write quick for prices and profitable dealer's proposition.

Duplex Cantilever Spring Co
180 N. Dearborn St., Chicago, Ill

THE C. G. SPRING COMPANY

CHRISTIAN GIRL
PRESIDENT

SPRINGS

KALAMAZOO, MICH.
SUCCESSORS TO THE KALAMAZOO SPRING & AXLE CO.

Buffalo Automobile Spring Co., Inc.

Manufacturers!
Let us quote on
your Spring
requirements.



Jobbers!
Front Springs for
Fords ready for im-
mediate delivery.
Write for prices.

SCIENTIFICALLY HEAT-TREATED SPRINGS

Office and Factory: 146 Virginia Street, Buffalo, N. Y.

SPRINGS, Supplementary, for Fords
(Continued)

Universal Sales Co., Odd Fellows Bldg., Indianapolis, Ind. (Sole Distributors for H. L. G. Co., Indianapolis, Ind.)
 Universal Shock Absorber & Mfg. Co., 2525 Milwaukee Ave., Chicago, Ill.
 Universal Trans-Lever Spring Co., 14th & Howard Sts., Detroit, Mich.
 Velvet—See Blackledge Mfg. Co.
 Volute Spring Shock Absorber Co., Mt. Vernon, N. Y. "Rex."
 W-X—See Star Specialty Mfg. Co.
 W. & C.—See Eckhouse & Co.
 Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis. "Fordexer," "Steelbit."
 Webber & Co., P. H.—See Eckhouse & Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Wilcox Pressed Steel Co., 1713-35 Armitage Ave., Chicago, Ill.
 Winger Ride E-Z—See King Washing Machine Co.

SPRINGS, TIRE CHAIN TIGHTENING—
See Tighteners, Tire Chain**SPRINGS, Tow Rope**

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

SPRINGS, UPHOLSTERY—See Springs, Seat**SPRINGS, VALVE—See Springs, Machinery****SPRINGS, VALVE, FOR FORDS—See Springs, Engine Valve****SPROCKETS, Machined**

(For Sprocket Blanks—See Castings; also Forgings; also Gears, Blanks)

Baldwin Chain & Mfg. Co., Worcester, Mass. (See page 237.)
 Boston Gear Works (Norfolk Downs), Quincy, Mass.
 Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 449.)
 Cullman Wheel Co., 1356 Altgeld St., Chicago, Ill. (See page 899.)
 De Voe Co., H. S., 411 N. Plum St., Muncie, Ind.
 Ford Mfg. Co., Peter, 50 Park St., Somerville, Mass.
 Grant Gear Works, 151 Pearl St., Boston, Mass.
 Link-Belt Co., Indianapolis, Ind. (See page 237.)
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
 Pennmaid—See Pennsylvania Gear & Machine Co.
 Pennsylvania Gear & Machine Co., E. Tioga, Welkel & Janney Sts., Philadelphia, Pa. "Pennmaid." (See page 483.)
 Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 477.)
 Standard Gear Co., 930 Commonwealth Ave., Detroit, Mich.

SPROCKETS, Motorcycle

Hydraulic Pressed Steel Co., of the Hydraulic Steel Co., Cleveland, O. (See page 421.)

STABILIZERS, Airplane

Brown & Co., S. N., 111 Commercial St., Dayton, O.
 Martin Aerodynamic Stabilizer Co., 280 Madison Ave., New York, N. Y.
 Martin Aeroplane Factory, Ellyria, O.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

STABILIZERS, CAR—See Shock Absorbers; also Springs, Supplementary**STABILIZERS, DRIVE SHAFT—See Bearings, Drive Shaft****STABILIZERS, STEERING—See Checks, Steering****STAKE POCKETS—See Pockets, Truck Stake****STAMPINGS and PRESSINGS, Metal**

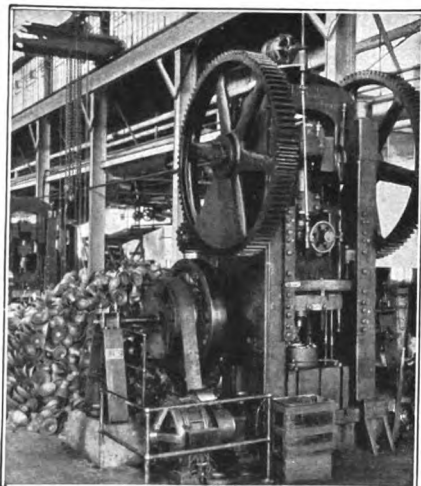
A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
 A. C. R.—See American Cloth Register Co.
 Ability Tool & Mfg. Co., 4100 Lincoln Ave., Chicago, Ill.
 Acklin Stamping Co., Toledo, O. (See page 889.)
 Acme Die & Stamping Co., 505 Chartiers Ave., McKees Rocks, Pa.
 Acme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.
 Adell Mfg. Co., Orange, Mass.
 Advance Engineering Co., 6539 Metta Ave., Cleveland, O.
 Advance Machinery Co., Van Wert, O.
 Advance Tool Works, 2300 Warren Ave., Chicago, Ill.
 Ajax Auto Parts Co.—See Brandenburg Bros. & Eccleston.
 Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.
 Akron-Selle Co., High & Chestnut Sts., Akron, O.
 Allen & Co., S. L., Fifth St. & Glenwood Ave., Philadelphia, Pa.
 Alloy Metal Stamping & Specialty Co., 444 N. 13th St., Philadelphia, Pa.
 Alloy Parts Mfg. Co., Canton, O.
 Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.
 Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.
 Amco—See Shaw Co.
 American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
 American Brass Co., Waterbury, Conn. (See page 165.)
 American Brass Novelty Co., Grand Haven, Mich.
 American Brass Products Co., Pottstown, Pa.
 American Cloth Register Co., 189 Main St., New Britain, Conn. "A. C. R."
 American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburg, Pa.
 American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 American Safety Lamp & Mine Supply Co., 1300 Capouse Ave., Scranton, Pa.
 American Spring & Mfg. Corp., Holly, Mich.

Everything is listed under the NOUN or principal word

Pressed Steel Parts

made by

GIER



HUB FLANGES
BRAKE DRUMS
HUB CAPS
OIL PANS
SPLASH TROUGHS
DUST COVERS
GEAR COVERS
GEAR CASES
TORQUE ARMS
BRAKE DISCS
AXLE PARTS
CLUTCH CONES
CLUTCH COLLARS
CLUTCH SLEEVES
FRAME BRACES
BRACKETS
WHEEL HUBS
UNIVERSAL JOINT
AND REAR AXLE
HOUSINGS

HERE in this pressed steel plant, which is one of the most modern and complete in the country, are manufactured all of the hubs, drums and flanges for the divisions of the Motor Wheel Corporation. Yet our capacity is so large that we still make pressed steel parts for other manufacturers and should like to figure with you on any of your requirements.

**MOTOR WHEEL CORPORATION, LANSING, MICH.
Gier Pressed Steel Plant**

Four Million Wheels a Year — *from standing tree to finished product*

WITHIN the confines of our organization, 4,000 sets of wood wheels for motor cars and trucks are made each day—of wood grown in our own forests, cut and seasoned in our own mills and of steel pressed and fashioned in our own plant.

The units of the Motor Wheel Corporation are as follows:

Gier Pressed Steel Plant

Lansing, Michigan

Prudden Wheel Plant

Lansing, Michigan

Auto Wheel Plant

Lansing, Michigan

Weis and Lesh Plants

Memphis and Jackson, Tennessee

Monroe, Louisiana

Light, Arkansas

Saw Mills at Other Points

The men directly responsible for the organizing and operating of the Motor Wheel Corporation are H. F. Harper, President and General Manager; W. H. Newbrough, Chairman of Board of Directors; B. S. Gier, First Vice President and Treasurer; D. L. Porter, Vice President; W. C. Brock, Vice President; and C. C. Carlton, Secretary, who with O. A. Jenison, J. B. Siegfried and Chas. W. Nichols constitute the Board of Directors. Mr. Siegfried is General Sales Manager.

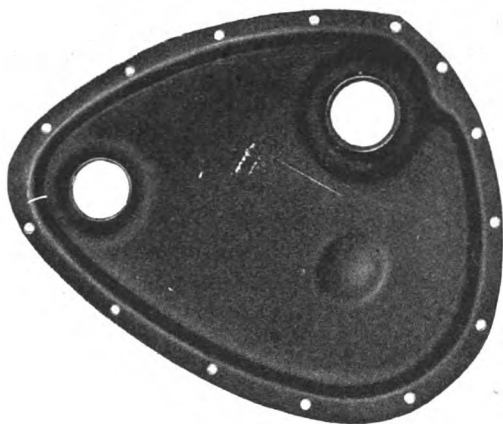


Motor Wheel Corporation

Manufacturers

Motor Vehicle Wheels Complete
Metal Stampings, Steel Products

LANSING, MICH.



SHEET METAL STAMPING

DEEP DRAWN WORK *for*

Passenger Cars, Tractors, Trucks

Electric Apparatus and Fixtures
Machine Tools **Vitreous Enameling**

Hub Flanges, Brake Drums, Step Hangers, Clutch
Cones, Housing and Gear Covers, Reflectors, Table
Tops, Oil Pans.

EQUIPPED TO ASSEMBLE AND PARKER PROC-
ESS Engine Bases, Oil Pans, Gear Covers and
Special Units.

Send us your print for estimate.

The Transue & Williams Steel Forging Corp.
ALLIANCE, OHIO

Office and Works, 500 W. Ely St.

Detroit Office, 1201 Ford Bldg.

STAMPINGS and PRESSINGS, Metal (Continued)

- American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
 American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Ansonia Mfg. Co., Ansonia, Conn.
 Arlington Machine Co., 52-56 Broome St., Newark, N. J.
 Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
 Asch and Co., Inc., 10-24 W. 51st St., New York, N. Y. (New England and New York Distributors for Standard Stampings.) (See page 243.)
 Ashley Machine Works, 721 University Ave., Rochester, N. Y.
 Atlas Metal Stamping Co., 61 Navy St., Brooklyn, N. Y.
 Atlas Mfg. Co., 125 Water St., New Haven, Conn.
 Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.
 Auto Products Co., Station H, Cincinnati, O. (See page 159.)
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich.
 B. J. Stamping Co., 1435 Dorr St., Toledo, O.
 B & S Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "XL."
 B. & W. Tool & Die Co., 102 St. Clair Ave., N. W., Cleveland, O.
 Badger Corrugating Co., 214-16 S. Second St., La Crosse, Wis.
 Barclay-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.
 Barnes Co., Wallace, Bristol, Conn.
 Bassick Co., Bridgeport, Conn. (See page 323.)
 Baum's Metal Specialties Co., 1022 Wyandotte St., Kansas City, Mo.
 Bay State Stamping Co., 380 Chandler St., Worcester, Mass.
 Beaver Machine & Tool Co., 625-48 N. Third St., Newark, N. J.
 Becco—See Michigan Motor Specialties Co.
 Benjamin Electric Mfg. Co., 808 W. Washington Blvd., Chicago, Ill. (See pages 181 and 529.)
 Bersted Forming Tool Co., 765 Mather St., Chicago, Ill.
 Best Stove & Stamping Co., 125 E. Atwater St., Detroit, Mich.
 Betco—See Blodgett Engineering & Tool Co.
 Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O. (See page 805.)
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 625.)
 Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.
 Blickman, S., 199 Lafayette St., New York, N. Y. (See page 761.)
 Blodgett Engineering & Tool Co., 14th & Dalzelle Sts. (Roosevelt Park), Detroit, Mich. "Betco."
 Board, Edward, Seventh & Wood Sts., Philadelphia, Pa.
 Bossert Corp., Utica, N. Y. (See page 887.)
 Boston Pressed Metal Co., 171-73 Union St., Worcester, Mass.
 Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
 Bowen Products Corp., Auburn, N. Y. (See page 321.)
 Bowen Products Corp. (Winkley Division), 2760 W. Warren Ave., Detroit, Mich.
 Brandenburg Bros. & Eccleston, 1112 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Ajax Auto Parts Co., Racine, Wis.)
 Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.
 Brewer Tichenor Corp., Cortland, N. Y. (See page 573.)
 Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
 Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.
 Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.
 Browne Mfg. Co., W. G., Kingston, N. Y.
 Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Burgess-Norton Mfg. Co., 532-49 Peyton St., Geneva, Ill. (See page 627.)
 C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Regensteln-Voeder Co., Chicago, Ill.)
 Candler Radiator Co., 1084-86 Jefferson Ave., Detroit, Mich. (See page 633.)
 Canton Metal Ceiling Co., 3100 Harrison Ave., Canton, O.
 Carde Stamping & Tool Co., West Side, Saginaw, Mich.
 Carl Sons, Chas. W., Coles St., Trenton, N. J.
 Cary Spring Works, 240-42 W. 29th St., New York, N. Y.
 Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.
 Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill. (See page 605 and 829.)
 Cassidy-Fairbank Mfg. Co., 6126 S. La Salle St., Chicago, Ill.
 Central Machine Works, 1911 N. 12th St., St. Louis, Mo.
 Central Machine Works, 19 Church St., Worcester, Mass. (See page 611.)
 Central Service Corp., 1907 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 835.)
 Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill.
 Chicago Fuse Mfg. Co., Chicago, Ill. (See page 427.)
 Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.
 Circle Stamping & Mfg. Co., 241-45 Cortland St., Belleville, N. J.
 City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa.
 Clark-Cadle-Harmon Corp., 1129 University Ave., Rochester, N. Y.
 Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 1003.)
 Cleesattel & Sons, Wm., 157-61 Walden Ave., Buffalo, N. Y.
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
 Cleveland Metal Stamping Co., 8110 Payne Ave., Cleveland, O.
 Cleveland National Machine Co., 1866 W. 70th St., Cleveland, O.
 Cleveland Wrought Products Co., W. 58th St., south of Denison Ave., Cleveland, O. (See page 825.)
 Cochran Piston Corp., Detroit, Mich. (See page 709.)
 Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
 Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.
 Colson Co., Elyria, O.
 Columbia Metal Stamping Co., 1540 E. 49th St., Cleveland, O.
 Cooney-Dunn Co., 72 Grand St., New York, N. Y.
 Cornwall Mfg. Co., Cleveland, O. (See page 937.)

Everything is listed under the NOUN or principal word

BOSSERT

Stampings

are being used advantageously by the automobile and truck manufacturers in place of castings and forgings, which are not only more expensive, very largely on account of excessive machining required, but add surplus weight to their assemblies.

Our Presses

With our wide range of presses, we are able to produce stampings of most any size and thickness. To exemplify the power of our presses, we might state that we are producing at the present time, stampings 38" long, 24" wide, 1" stock drawn to shape, weight about 300 lbs. If it is practical for a stamping, BOSSERT can do it.

Our Engineers will gladly cooperate with you in working out your stamping problems

THE BOSSERT CORPORATION

Main Office and Works, UTICA, N. Y.

CLEVELAND, O.
812 Fidelity Mortgage Bldg.

NEW YORK CITY
30 Church Street

DETROIT, MICH.
1513 Ford Bldg.

Please mention The Automobile Trade Directory

STAMPINGS and PRESSINGS, Metal (Continued)

- Crosby Co., Buffalo, N. Y. (See page 893.)
 Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill. (See page 719.)
 Custer Pressed Steel Wheel Co., Bradford, Pa.
 D. & D. Machine & Tool Co., 14-20 Jefferson Ave., Elizabeth, N. J.
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 Dall Steel Products Co., Hosmer & Main Sts., Lansing, Mich.
 Deep Drawn Metal Corp., 195 Plymouth St., Brooklyn, N. Y.
 Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.
 Derby Coppersmithing & Sheet Metal Contracting Co., Derby, Conn.
 De Sta Co.—See Detroit Stamping Co.
 Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
 Detroit Pressed Steel Co., Detroit, Mich. (See page 1053.)
 Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich. "De Sta Co."
 Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 531.)
 Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.
 Die Products Mfg. Co., 11 St. Marys St., Dayton, O.
 Dismont & Sons, Henry, (Tacony), Philadelphia, Pa.
 Dorchester Machine & Tool Works, 70 Freeport St., Boston, Mass.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Dover, George W., Eddy St. & Thurbers Ave., Providence, R. I.
 Duplex Machine Co., 93 Lafayette St., Newark, N. J.
 Efemco—See Foster, Merriam & Co.
 Eisler Mfg. Co., 15 Elser Terrace, Rochester, N. Y.
 Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
 Elyria Steel Products Co., Elyria, O.
 Empire Art Metal Co., College Point, N. Y.
 Empire Machine & Stamping Co., Buffalo, N. Y.
 England Mfg. Co., 5914 Federal Ave., Detroit, Mich.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.
 Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for McCord Stampings.) (See page 115.)
 Eveready Mfg. Co., 80 Boylston St., Boston, Mass.
 Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.
 Faries Mfg. Co., 624 N. Union St., Decatur, Ill.
 Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.
 Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 891.)
 Fernald Mfg. Co., North East, Pa.
 Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 593.)
 Fischer Spring Co., Chas., 473 Kent Ave., Brooklyn, N. Y.
 Flour City Ornamental Iron Co., Minneapolis, Minn.
 Forg Mfg. Co., Peter, 50 Park St., Somerville, Mass.
 Forsyth Bros. Co., Harvey, Ill. (See page 1055.)
 Forsyth Metal Goods Co., Elm St., East Aurora, N. Y.
 Fort Dearborn Mfg. Co., First St., Rock Falls, Ill.
 Foster, Merriam & Co., Meriden, Conn. "Efemco," "Ful-A-Pep," (See page 899.)
 Fostoria Pressed Steel Co., Fostoria, O. (See page 465.)
 Fox Co., Gustave, 411-13 Race St., Cincinnati, O.
 Frankford Machine Co., 4099 Frankford St., Philadelphia, Pa.
 Ful-A-Pep—See Foster, Merriam & Co.
 Galesburg-Coulter Disc Co., Galesburg, Ill.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.
 Geer Machine Works, Wm. E., 112 Summit Lane (East Liverpool), Liverpool, O.
 Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 General Metal Crafts Co., 2127 Filsten St., Chicago, Ill.
 General Metals Co., 6189 Greenwood Ave., Detroit, Mich.
 General Stamping & Mfg. Works, 1653 W. Belmont Ave., Chicago, Ill.
 Geometric Stamping Co., Cleveland, O.
 Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 935.)
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.
 Great Lakes Pressed Steel Corp., 1400 Niagara St., Buffalo, N. Y.
 Greer, Frederic, 525 W. Van Buren St., Chicago, Ill.
 Greist Mfg. Co., New Haven, Conn. (See page 823.)
 Guyot Bros., Attleboro, Mass.
 H. K. Metal Products Co., 60 Grand St., New York, N. Y.
 H. & D. Co., Crawfordsville, Ind. (See page 1031.)
 Hadden-Messinger Corp., 24 Lorimer St., Brooklyn, N. Y. (See page 821.)
 Hagstrom Model & Tool Works, 1623 Grand Ave., Kansas City, Mo.
 Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
 Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.
 Hardy Mfg. Co., Pendleton, Ind. (See page 397.)
 Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O.
 Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
 Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.
 Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.
 Harwich Stamping Co., Miller Rd. & S. Thayer St., Detroit, Mich.
 Hastings Mfg. Co., 36 Mill St., Hastings, Mich. (See page 573.)
 Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.
 Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
 Henry Mfg. Co., G. J., 3263-70 W. Grand Ave., Chicago, Ill.
 Hero Mfg. Co., 23rd & Westmoreland Sts., Philadelphia, Pa.

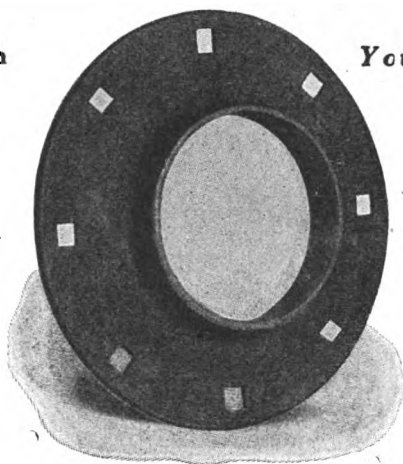
Everything is listed under the NOUN or principal word

HEAVY PRESSED PARTS TO ORDER

Your Design

Your Schedules

And
Small Stampings
in quantities, too



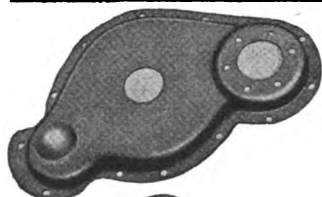
Blanking-
Drawing
Deep Drawing-
Forming
and Channels up
to 54" long.

**PSCO FORMED-STEEL
THE PRESSED STEEL CO.**

Wilkes-Barre

Luzerne St.

Penna. 1



Acklin Stampings

Low cost because of quantity production—many presses operated at high efficiency—raw steel purchased on favorable basis. We will supply Your stampings at **LOW COST**—deliveries on time—parts will pass most rigid inspection.

We offer a complete service to the Automotive Manufacturer on pressed metal parts for the Motor, Clutch, Transmission, etc.

The Acklin Stamping Company
Toledo, Ohio

Please mention The Automobile Trade Directory

STAMPINGS and PRESSINGS, Metal (Continued)

- Higgin Mfg. Co., Newport, Ky.
Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.
Hoelt & Co., 400 N. Ashland Ave., Chicago, Ill.
Kotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 335.)
Howes Co., S. M., 42 Union St., Boston, Mass.
Hub Engineering & Machine Co., Bound Brook, N. J.
Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 897.)
Hydraulic Pressed Steel Co., of the Hydraulic Steel Co., Cleveland, O. (See page 421.)
Hyman & Co., Henry, 476 Broadway, New York, N. Y.
Iles Mfg. Co., E. W., Shelton, Conn.
Indestructible Wheel Co., Lebanon, Ind.
Indianapolis Pressed Steel Co., 2044 N. Rural St., Indianapolis, Ind.
Industrial Electric Mfg. Co., 139 Beaubien St., Detroit, Mich.
Ingram-Richardson Mfg. Co., Beaver Falls, Pa.
International Auto Parts Co., 16th & Wood Sts., Philadelphia, Pa.
International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.
International Metal Stamping Co., Artillery & Muster Aves., Detroit, Mich.
International Steel Products Co., Hartford, Wis.
Ireland & Matthews Mfg. Co., Beard & Chatfield Sts., Detroit, Mich.
Iroquois Tool & Stamping Co., 909-17 Genesee St., Buffalo, N. Y.
Jambor Mfg. Co., Milwaukee, Wis. (See page 893.)
Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.
Kailes Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
Kamco Corp., 34 Barclay St., New York, N. Y.
Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.
Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
Keystone Production & Mfg. Co., 1835 W. 22d St., Chicago, Ill.
Kickhnefer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis. (See page 891.)
Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
Kitchen Specialty Mfg. Co., Elm & Reed Sts., Reading, Pa.
Klein, Adolph, 174 Center St., New York, N. Y.
Klopping, A. C., 1678 Norwood Ave., Toledo, O.
Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.
Koehler Mfg. Co., Marlboro, Mass.
Kontiglow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
L. & L. Mfg. Co., 134 High St., Newark, N. J.
La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.
Lansing Stamping Co., Lansing, Mich.
Larson Tool & Stamping Co., Olive St., Attleboro, Mass.
Lawson Co., F. H., Dept D, Cincinnati, O. (See page 125.)
Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.
Lehigh Engineering Co., Rogersford, Pa.
Levy, Benj., 355 W. Broadway, New York, N. Y.
Liberty Metal Spinning Works, 180 Centre St., New York, N. Y.
Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.
Lidseen, Gustave, 832-40 S. Central Ave., Chicago, Ill.
Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.
Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.
Light Tool & Stamping Co., 1783 E. 37th St., Cleveland, O.
Lightwell Steel Sash Co., Newport, Del.
Lough Bros., 90 West St., New York, N. Y. (Dealers.) (See page 207.)
Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.
McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
McCord & Co., 122 S. Michigan Ave., Chicago, Ill.
McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.
McCord Mfg. Co., Detroit, Mich.
McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.
McKinney Mfg. Co., Liverpool & Metropolitan Sts., Pittsburgh, Pa.
Maforco—See Market Forge Co.
Mail O Meter Co., 3469 E. Jefferson St., Detroit, Mich.
Mann Corp., Kankakee, Ill.
Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
Mantle & Co., 1907 Park Ave., New York, N. Y.
Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Maforco."
Mars Mfg. Co., 13th St. & Second Ave. (S. Brooklyn), Brooklyn, N. Y.
Maryland Metal Products Co., Hagerstown, Md.
Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1051.)
Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.
Matthews Mfg. Co., 104 Gold St., Worcester, Mass.
Matthews Mfg. Co., H. A., Seymour, Conn.
Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.
Mead & Cross Co., 309 Lafayette St., New York, N. Y.
Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa.
Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.
Metal Specialty Co., 1529-33 W. Sixth St., Cincinnati, O.
Meyers Co., W. F., 13th & J Sts., Bedford, Ind.
Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.
Michigan Metal Spinning Mfg. Co., 2130-34 E. Woodbridge St., Detroit, Mich.

Everything is listed under the NOUN or principal word

FEDERAL HEAVY STEEL STAMPINGS

To the Automotive Engineer and Purchasing Agent interested in quantity production of brake drums and heavy steel stampings—gasoline and air tanks—we will be pleased to submit estimates on any size from the smallest to the giant brake drum shown here.

Our plant and equipment are large enough to furnish prompt delivery on any quantity.

**DIMENSION
OF BRAKE
DRUM
SHOWN IN
ILLUSTRATION
24½ INCHES
IN
DIAMETER**



**ALSO
MANUFACTURER
OF SEAMLESS
CONTAINERS
TO I. C. C.
SPECIFICATIONS**

FEDERAL PRESSED STEEL CO.
MILWAUKEE 52 Keefe Avenue WISCONSIN

KICKHAEFER STAMPINGS and DIES

We specialize in Light Stampings in all metals. Send us your Blueprints for Estimate.



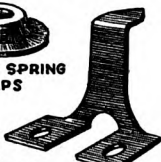
SHIMS



**VALVE SPRING
CAPS**



**CYLINDER
CORE HOLE
PLUGS**



**FLYWHEEL
INDICATOR**

Send for this Book on Dies and Stampings.



DUST CAPS



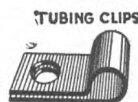
ANGLES



**SPECIAL
WASHERS**



WIRE CLIPS



TUBING CLIPS

KICKHAEFER MFG. COMPANY

Dept A, 359-371 Reed Street, MILWAUKEE, WISCONSIN

**FOR
1/8, 1/4, 3/8,
1/2, 5/8
TUBING**

Please mention The Automobile Trade Directory

STAMPINGS and PRESSINGS, Metal (Continued)

- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
Michigan Pressed Steel Co., 126 S. Artillery Ave., Detroit, Mich.
Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 981.)
Milwaukee Metal Working Co., 332-33 Clinton St., Milwaukee, Wis.
Mirrorscope Co., E. 18th St. & Waterloo Rd., Cleveland, O.
Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.
Moline Pressed Steel Co., Fifth St., East Moline, Ill.
Monarch Stamping Co., Chappaqua, N. Y.
Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.
Moore & Co., 301 W. Grand Ave., Chicago, Ill.
Morrison & Sons, Frank, 1320 W. 11th St., Cleveland, O. (See page 937.)
Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 1009.)
Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)
Motor Products Corp., 11803 Mack Ave., Detroit, Mich. (See page 843.)
Motor Wheel Corp. (Gier Pressed Steel Plant), Lansing, Mich. (See pages 883 and 884.)
Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
Mullins Body Corp., 132 Franklin Ave., Salem, O.
Murray Auto Parts Mfg. Co., Atlanta, Ga.
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Murray Mfg. Co., J. W., Clay & St. Aubin Aves., Detroit, Mich.
National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.
National Metalware Co., 95 S. Fifth St., Brooklyn, N. Y.
National Stamping & Electric Works, 410-26 Clinton St., Chicago, Ill.
National Steel Products Co., 1610 Crystal Ave., Kansas City, Mo.
Neavel Mfg. Co., 1409 Kansas Ave., Kansas City, Mo.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
Nelson Tool Co., 732 E. 142d St., New York, N. Y.
New Britain Machine Co., Chestnut St., New Britain, Conn.
New England Pressed Steel Co., Washington Ave., Natick, Mass.
Newton Mfg. Co., Church St., Plainville, Conn.
Niagara Brass Mfg. Co., Lockport, N. Y.
Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y.
Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.
North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo.
Oakes Co., Indianapolis, Ind. (See page 397.)
Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill.
Pandoifo Mfg. Co., St. Cloud, Minn.
Parish Mfg. Co., Reading, Pa. (See page 419.)
Parish & Bingham Corporation, Cleveland, O.
Parker White-Metal & Machine Co., 23rd & Railroad Sts., Erie, Pa.
Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
Peerblow Mfg. Co., Leetsdale, Pa.
Perfect Window Regulator Co., 20 Exchange Pl., New York, N. Y. (See page 787.)
Perfection Metal Products Co., College Point, N. Y.
Pheoli Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
Phoenix Mfg. Co., Lorraine & Grand River Aves., Detroit, Mich. (See page 147.)
Plum & Little, 30 N. Water St., Rochester, N. Y.
Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.
Powell Pressed Steel Co., Hubbard, O. (See page 893.)
Pratt Chuck Co., Frankfort, N. Y.
Precision Metal Workers, 3100-12 Carroll Ave., Chicago, Ill.
Presteel Co., Grafton, O.
Pressed Steel Car Co., Fifth Ave. & Wood St., Pittsburgh, Pa.
Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa. (See page 889.)
Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
Production Engineering Co., 212 Centre St., New York, N. Y.
Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
Quinsigamond Pressed Steel Co., 63 Jackson St., Worcester, Mass.
R. P. K. Pressed Metal Co., Bridgeport, Conn.
Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
Recording Devices Co., 554 W. Fifth St., Dayton, O.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Regenstein-Veeder Co.—See C. A. S. Engineering Co.
Reliance Metal Spinning & Stamping Co., 160 John St., Brooklyn, N. Y.
Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
S. & Y. Co., 55-57 Governor St., Springfield, Mass.
Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.

Everything is listed under the NOUN or principal word

JAMBOR TIMERS

FOR FORD CARS
without a fault

A high grade timer of standard design at a low cost. 26 years' stamping experience behind its production.

Territory now open.
Write for information.

JAMBOR MFG. CO.
Milwaukee, Wis.

SHEET METAL STAMPING

With our complete equipment we guarantee quality product and prompt shipment of any quantity of the most difficult stampings made from steel, brass, bronze, copper or aluminum sheet. Send blue prints or sample for estimate.

The Crosby Company
Buffalo, N. Y.

New York Office: 30 Church Street
Detroit Office: 914 Ford Bldg.
Cleveland Office: 418 Schofield Bldg.

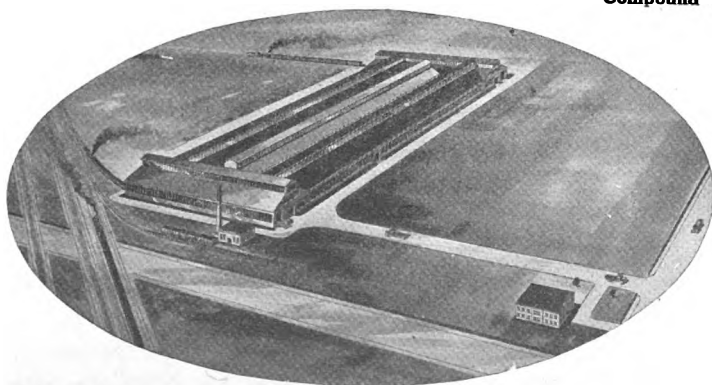
Brake Drums
Clutch Discs
Step Hangers
Hub Flanges
Circles
Barrel Heads

PRESSED STEEL STAMPINGS

LARGE and SMALL

Specialty of Deep Drawings

Oil Pans
Gear Cases
Running Boards
Generator Frames
Tractor Seats
Compound Boxes



Pressed Steel Platforms
for
Electric & Hand Lift
Industrial Trucks

THE POWELL PRESSED STEEL CO.
HUBBARD, OHIO
(Suburb of Youngstown, O.)

Please mention The Automobile Trade Directory

STAMPINGS and PRESSINGS, Metal (Continued)

Savage Arms Corp., Sharon, Pa.
Saxon Mfg. Co., 1024-40 Grand Ave., Toledo, O.
Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.
Schroeder Bros. Mfg. Co., 102 Brook St., Torrington, Conn.
Scott & Fetzer Machine Co., Locust Ave., Cleveland, O.
Seovill Mfg. Co., Waterbury, Conn.
(See page 831.)
Seavey Machine Works, Eugene, 359 Pearl St. New York, N. Y.
Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
Sessions & Son, J. H., Bristol, Conn.
Shapiro & Aronson, 20 Warren St., New York, N. Y.
Sharon Pressed Steel Co., Sharon, Pa.
Shaw Mfg. Co., 126 Massachusetts Ave., Boston, Mass.
Shawmut Iron & Wire Works, 97 Tileston St., Everett, Mass.
Shonk Works, Maywood, Ill.
Shunk Mfg. Co., Bucyrus, O.
Simplex Stamping Co., 367 Ellicott St., Buffalo, N. Y.
Simplex Steel Stamping Co., 1924-28 Gravois Ave., St. Louis, Mo.
Slick-Knox Steel Co., Sharon, Pa.
Smith Co., Thomas, 13 Cypress St., Worcester, Mass.
Smith Corp., A. O., Milwaukee, Wis.
(See page 903.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Smith Mfg. Co., W. F., 157 Stratford Ave., Bridgeport, Conn.
Special Machinery Co., 40 Rimer St., Bridgeport, Conn.
Specialty Products Co., 494 Mulberry St., Newark, N. J.
Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
Spro Mfg. Co., C., 62-72 E. 131st St., New York, N. Y.
Spring Snap Fastener Co., Lynn, Mass.
Stamping & Tool Co., Third & Cass Sts., La Crosse, Wis.
Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.
Standard Mfg. Co., Shelby, O.
Standard Metal Mfg. Co., 227 Chestnut St., Newark, N. J.
Standard Metal Spinning Co., 133 Mott St., New York, N. Y.
Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
Standard Steel Box Co., Villars Ave., Bridgeville, Pa.
Standard Tool & Mfg. Co., 512 E. Lafayette Blvd., Detroit, Mich.
Stanley Works, (Special Productions Dept.), New Britain, Conn.
(See page 491.)
Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.
Stearns Stamping Co., W. H., 34 Southbridge St., Worcester, Mass.
Steel Furniture Co., 1480 Buchanan Ave., S. W., Grand Rapids, Mich.
Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
Steiner & Co., Wm., 279 Washington St., Newark, N. J.
Stenman Wire Specialty Co., 18 Grafton St., Worcester, Mass.
Stephans Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.

Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.
Stewart-Skinner Co., 17 Green St., Worcester, Mass.
Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
Superior Metal Products Co., Elyria, O.
(See page 895.)
Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 237.)
Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
Supreme Machine & Tool Works, 4085 Park Ave., New York, N. Y.
Sutterley & Co., G. T., 1723 N. Second St., Philadelphia, Pa.
Syracuse Metal Products Corp., 316 Madison St., Syracuse, N. Y.
Syracuse Stamping Co., 422 West Ave., Syracuse, N. Y.
T. & D. Mfg. Co., 207 Canal St., New York, N. Y.
Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
Tiffin Art Metal Co., Tiffin, O.
Toledo Bridge & Crane Co., Toledo, O.
Toledo Steel Barrel Co., Toledo, O.
Tool & Machine Products Co., Waldo St., Newark, O.
Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
Trausue & Williams Steel Forging Corp., Alliance, O. (See page 885.)
Triumph Mfg. Co., Kansas City, Mo.
Trumbull, F. S., Bishop & Conn. Aves., Bridgeport, Conn.
Truscon Steel Co., Albert St., Youngstown, O.
Turner Novelty Co., John C., Dayton, O.
U. S. Pressed Steel Co., Stewart St., Ypsilanti, Mich.
Up-To-Date Machine Works, 2915 Wash Ave., Chicago, Ill. (See page 827.)
Varley Mfg. Co., Findlay, O.
Viking Tool & Machine Co., 243-49 44th St., Brooklyn, N. Y.
Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
Wagner Mfg. Co., E. R., North Milwaukee, Wis. (See page 895.)
Walker Body Co., Amesbury, Mass.
Walsham Co., Josiah, 48 Dudley St., Providence, R. I.
Ware Bros. Automatic Products, 224 N. Ada St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Waterbury Screw & Specialty Co., 660-80 Cooke St., Waterbury, Conn.
Weber-Knapp Co., Jamestown, N. Y.
West Michigan Machine Tool Co., 231 Iowa Ave., Grand Rapids, Mich.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 263.)
Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)
Western Screw Products Co., St. Louis, Mo. (See page 605.)
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.
Wickwire-Spencer Steel Corp., Worcester, Mass. (See pages 640 and 819.)
Wilcox Pressed Steel Co., 1718-35 Armitage Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

METAL STAMPINGS

Hood Fasteners
Hood Handles

FOR
AUTOMOBILES

Roof Rails
Foot Rails

E.R. WAGNER MFG CO.
NORTH MILWAUKEE, WIS.

SHEET METAL STAMPINGS



FOR
AUTOMOTIVE
VEHICLES



THE BETTCHER STAMPING & MFG. CO.
3106 W. 61st Street CLEVELAND, OHIO

"SQ"

**THE SUPERIOR METAL PRODUCTS
COMPANY, ELYRIA, OHIO**

Manufacturers of

Superior "QUALITY" Metal Stampings and Drawings
for Automobiles, Trucks and Tractors. Ford Parts.

Sales Offices in Detroit, Michigan, and Chicago, Illinois

"SQ"

"SQ"

"SQ"

Please mention The Automobile Trade Directory

STAMPINGS and PRESSINGS, Metal (Continued)

- Wilson Body Co., C. R., 1600 Clay Ave., Detroit, Mich.
 Wilton Machine Tool Co., 84 Linden Park St., Boston, Mass.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)
 Worcester Stamped Metal Co., Worcester, Mass. (See page 1051.)
 XL—See B & S Mfg. Co.
 York Corrugating Co., York, Pa. (See page 931.)
 Youngstown Pressed Steel Co., Youngstown, Ohio.
 Zeldler Co., William A., 182 Locust St., New York, N. Y.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)

STAMPS, Steel

(For numbering or lettering Parts)

- Baird Equipment Co., 324 W. Ohio St., Chicago, Ill.
 Becker Engraving Co., August, 247 Atlantic Ave., Boston, Mass.
 Bloch Metal Stamping Co., 33-90 Walker St., New York, N. Y.
 Brookes & Co., E. J., 227 Fulton St., New York, N. Y.
 Childs & Co., S. D., 136 S. Clark St., Chicago, Ill.
 Hanson Co., C. H., 178 N. Clark St., Chicago, Ill.
 Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.
 Kauts & Co., Fred C., 2632-35 W. Lake St., Chicago, Ill.
 Keene, Fred H., 152 Chambers St., New York, N. Y.
 Knight & Son, H. W., Seneca Falls, N. Y.
 McNamara, M., 85 Nassau St., New York, N. Y.
 Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.
 Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.
 Morris Metal Products Corp., 800 Union Ave., Bridgeport, Conn.
 Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
 Murdoch Co., Jas., 116 Opera Pl., Cincinnati, O.
 Ness, Jr., Geo. M., 61 Fulton St., New York, N. Y.
 New York Stencil Works, 100 Nassau St., New York, N. Y.
 Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.
 Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 897.)
 Patent Die & Stencil Works, 65-71 Broadway, Astoria, N. Y.
 Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.
 Schoder & Lombard Co., 202-04 Centre St., New York, N. Y. "Salco Master."
 Salco Master—See Schoder & Lombard Co.
 Schwerdtle Stamp Co., 39-41 Cannon St., Bridgeport, Conn.
 Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 237.)
 Walter & Sons, N. C., 3 Park Row, New York, N. Y.
 Wright & Son, Greg. G., 119-21 Opera Pl., Cincinnati, O.

STAMPS, Time

- Automatic Time Stamp Co., 160 Congress St., Boston, Mass.
 Calculagraph Co., 30 Church St., New York, N. Y.
 Cosmo—See Joslin Mfg. Co.
 Eclipse—See Joslin Mfg. Co.
 Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.
 Hoggson & Co., S. H., Thames Bldg., New York, N. Y.
 Joslin Mfg. Co., A. D., 223-25 W. Erie St., Chicago, Ill. "Cosmos," "Eclipse."
 Kastens, Henry, 419 1/4 W. 27th St., New York, N. Y. (See page 253.)

STANDARD BOXES—See Boxes, Standard and Curb

STANDS, Aircraft Propeller Vise

- Fay & Egan Co., J. A., 415 W. Front St., Cincinnati, O.

STANDS, AXLE, FOR FORDS—See Stands, Rear Axle

STANDS, BURNING IN—See Stands, Engine Repair.

STANDS, Electric Test

(For testing, starting and lighting equipment)

- Auto Electric Repair Co., 1336 Michigan Ave., Chicago, Ill.
 Becker Bros., 23-31 N. Jefferson St., Chicago, Ill. (See page 169.)
 Electric Machine Co., 329 W. Ohio St., Indianapolis, Ind. "Elmco."
 Elmco—See Electric Machine Co.
 Klemmer Bros. & Co., 128 W. Bridge St., Owatonna, Minn. "M. G. S."
 Niehoff & Co., Paul G., 232-242 E. Ohio St., Chicago, Ill. (See page 897.)

STANDS, Electric Test, for Fords

(For testing, starting and lighting equipment)

- Becker Bros., 23 N. Jefferson St., Chicago, Ill.
 F-B Electric & Mfg. Co.—See Fairbanks Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 619 to 622.)
 M. G. S.—See Klemmer Bros. & Co.
 Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 897.)
 Onan, David W., 1323 Penn Ave., N., Minneapolis, Minn. (See page 539.)

STANDS, Engine Repair

- American—See Fairbanks Co.
 Brodrick Bros., 59 Congress St., Hartford, Conn.
 Buckeye—See Central Brass & Fixture Co.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)

Everything is listed under the NOUN or principal word



SERVICE STATIONS WANTED

WE ARE THE ORIGINATORS OF THE SERVICE STATION PLAN WHICH PUT THE CONTACT AND BRUSH REPAIR BUSINESS ON A SYSTEMATIC PAYING BASIS. WRITE FOR CONTRACT AND GET ONE OF OUR CASH REGISTERS OF CONTACT PARTS FREE IF YOU DO ANY MAGNETO REPAIRING YOU WILL NEED THE DETECTOR METER FOR ACCURACY IN LOCATING MAGNETO SHORTS. IT QUICKLY PAYS FOR ITSELF. **PAUL G. NIEHOFF & CO. INC.** 232-242 E. OHIO ST. CHICAGO, U.S.A. METALLURGICAL AND ELECTRICAL LABORATORIES

ATTENTION

**We wish to
ANNOUNCE
that we now do all
kinds of expert ar-
mature rewinding
QUICK SERVICE**

STEEL STAMPS



Alphabet and Figure Stamps
Hand Stamps
Roller Stamps
Stamping Dies
Interchangeable Type Holder
for Master Markings

Pannier Bros. Stamp Co.

207-209 Sandusky Street
Pittsburgh, Penna.

**SPRINGS—COILED AND FLAT
STEEL, BRASS AND PHOSPHOR BRONZE**

SPRING COTTERS, SMALL WASHERS

16 lbs. Assorted Springs..... \$2.00
25 lbs. Assorted Cotter..... 5.00

Subject to market changes

Send for Catalogue

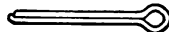
HUBBARD SPRING MFG. CO., Pontiac, Michigan

**We'ch Patent
EXPANSION PLUG**

For Closing Core Holes



PLUG READY TO EXPAND



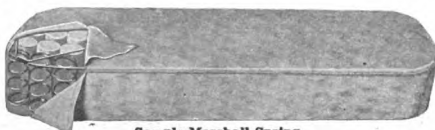
**SPECIAL POINTS
(FOR QUICK ASSEMBLY)**

Automobile Cushion and Back Springs

THIRTY DIFFERENT STYLES TO SELECT FROM

Compound Double
Deck Deluxe,
Single Deck De-
luxe, Marshall
Springs, Auto-
matic Type.

Valve Springs
Brake Springs
Hose Clamps



Sample Marshall Spring

Superior Double Deck Type, Liberty Type and others.
State your needs, we can fill the bill to the letter.

D'ARCY SPRING CO., Kalamazoo, Mich.

Springs for
closed bodies,
Pleasure Cars,
Tractors, Trucks,
all Conveyances.
Small Springs of
Every Descrip-
tion

Please mention The Automobile Trade Directory

STANDS, Engine Repair (Continued)

Dolder Mfg. Co., Earlville, Ill.
 E & S—See J B S Mfg. Co.
 Eco—See Western Mfg. Co.
 Ekern-Turk Mfg. Co., Pipestone, Minn.
Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.")
 (See pages 619 to 622.)
 Foundry Mfg. Co.—See International Purchasing Bureau.
 Haberkorn & Co., C. H., 1331 W. Elizabeth St., Detroit, Mich.
 Haco—See Hathorn Auto Co.
 Harnora Auto Co., 109-11 First St., S. E., Mason City, Ia. "Haco."
 Herschell-Spillman Motor Co., North Tonawanda, N. Y.
 International Purchasing Bureau, 203 E. 15th St., New York, N. Y. (Sole Distributors for Foundry Mfg. Co., St. Albans, Vt.)
 J B S Mfg. Co., Merchants National Bk. Bldg., Elmira, N. Y. "E & S."
 Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.
 Manley Mfg. Co., York, Pa.
 (See page 317.)
 Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 981.)
 Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
 O'Brien Mfg. Co., Broadway Bank Bldg., Denver, Colo.
 Peerblow Mfg. Co., Leedsdale, Pa. "Rhedman."
 Reliable Cable Tool Supply Co., 256 Main St., Buffalo, N. Y.
 Riedman—See Peerblow Mfg. Co.
 Service Station Equipment Co.—See Fairbanks Co.
 Shewalter Mfg. Co., 1217 Phythian St., Springfield, O. "Universal."
 Storm Mfg. Co., Dept. L., Minneapolis, Minn. (See page 623.)
 Universal—See Shewalter Mfg. Co.
 Whaley & Co., Edward A., Princess Anne Ave. & Virginian Railroad, Norfolk, Va.
 Western Mfg. Co., Sixth Ave., E. & S. Third Sts., Oskaloosa, Ia. "Eco."
 Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

STANDS, Engine Repair for Fords
 (For Burning-In Machines—See Machines, Burning-In)
 Amelung Mfg. Co., A. F., First St., Sanborn, Iowa.
 American—See Fairbanks Co.
 Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Danielson Tool Works, Fulton St., Wausau, Wis.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 Eco—See Western Mfg. Co.
 Economy Auto Supply Co., Denver, Colo. "O'Brien."
 Ekern-Turk Mfg. Co., Pipestone, Minn.

Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.")
 (See pages 619 to 622.)
 K. & S.—See Water Street Garage & Machine Co.
 Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.
 Manley Mfg. Co., York, Pa.
 (See page 317.)
 Miles Mfg. Co., Newton, Ia.
 Motax Mfg. Co., Taylorville, Ill.
 Nelson & Son, T. K., 606 Hill St., Harlan, Ia.
 O'Brien—See Economy Auto Supply Co.
 Peoria—See Auto Mechanics Tool Co.
 Peerblow Mfg. Co., Leedsdale, Pa. "Rhedman."
 Railway Specialty Co., Atchison, Kans. "Rysco."
 Rhedman—See Peerblow Mfg. Co.
 Rysco—See Railway Specialty Co.
 Service Station Equipment Co.—See Fairbanks Co.
 Southern Machine & Tool Co.—See Tuthill Sales Co.
 Spencer & Nelson, Lake View, Ia.
 Tuthill Sales Co., St. Louis, Mo., (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo.) (See page 641.)
 Water Street Garage & Machine Co., 738-30 Water St., South Brownsville, Pa. "K. & S."
 Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."
 Wilson, K. R., 10-16 Look St., Buffalo, N. Y. (See page 247.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

STANDS, Generator Holding

Durham Co., P. J., 244 W. 49th St., New York, N. Y.

STANDS, LIGHT—See Lights, Wash Stand**STANDS, Portable Tool**

Aome Sheet Metal & Mfg. Co., 3348 Lakeside Ave., Cleveland, O.
 Champion—See Western Tool & Mfg. Co.
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Portable Tool Supply Co., 256 Main St., Buffalo, N. Y.
 Western Tool & Mfg. Co., Springfield, O. "Champion."

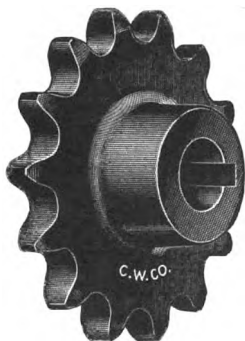
STANDS, Radiator Repair

Automotive Radiator Machine Co., 628½ Central Ave., Fort Dodge, Ia. "Schulz."
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 429.)
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.
 Schulz—See Automotive Radiator Machine Co.

Everything is listed under the NOUN or principal word

Cullman Sprockets

IN STOCK AND TO ORDER



Diamond, Whitney, Baldwin, Culver-Taylor and Coventry Chains, Block, Roller and High Speed Silent types on hand

Write for our New Catalog

Cullman Wheel Co., 1356 Altgeld St. Chicago

NORTH STAR GLARE SHIELD



A Brighter Driving Light Yet Absolutely Glareless

Controls that part of the light which glares in the face of an approaching driver, allowing the rays from the sides of the reflector to pass through unobstructed and without glare.

Complies with State Laws and Local Ordinances

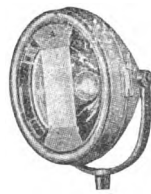
LIST PRICE \$4.00 PER PAIR

S. & M. Manufacturing Co.

BEFORE
ATTACHING

2332 S. Michigan Ave.

Chicago, Ill.



HOW IT LOOKS
WHEN ADJUSTED

High Grade Springs for Automotive Manufacturers



We are splendidly equipped with modern facilities to take care of your requirements. We make them for Automobiles, Trucks, Tractors and Trailers. We respectfully solicit your inquiry.

Factory representative: **THOMAS J. WETZEL**
IRON CITY SPRING CO.

NEW YORK CITY DETROIT, MICH.
PITTSBURGH, PENNA.

Please mention The Automobile Trade Directory

**STANDS, Rear Axle Repair, for
Fords**

American—See Fairbanks Co.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Continental Auto Parts Co., 1807 E. 17th
 St., Columbus, Ind. (See page 79.)
 Danielson Tool Co., Fulton St., Wausau, Wis.
 Eco—See Western Mfg. Co.
 Fairbanks Co., New York, N. Y. (Sole Dis-
 tributors for Service Station Equip-
 ment Co., Chicago, Ill. "American.")
 (See pages 619 to 622.)
 Miles Mfg. Co., Newton, Ia.
 Nazett Mfg. Co., 1440 Washington St., El-
 dora, Ia.
 Service Station Equipment Co.—See Fair-
 banks Co.
 Weaver Mfg. Co., 2177-79 S. Ninth St.,
 Springfield, N. J. (See page 741.)
 Western Mfg. Co., Sixth Ave. E. & S. Third
 Sta., Okaloosa, Ia. "Eco."
 Wisconsin Welding & Cutting Co., 556 E.
 Water St., Milwaukee, Wis.
 Zinke Co., 1326-26 Michigan Ave., Chicago,
 Ill. (Sales Department for Carswell-Ham-
 mond Mfg. Co., Boone, Ia.)

STANDS, REPAIR—See Stands, Engine Re-
 pair; also Stands, Portable Tool; also
 Stands, Rear Axle Repair; also Stands,
 Radiator Repair

STANDS, Tire Building

DeMattia Bros., River Rd. & Prescott Ave.,
 Garfield, N. J.
 Hibbs Rubber Co., 200 S. Boas St., Fort
 Worth, Tex.
 Miller, Chas. E., 1400 S. Meridian St., Ander-
 son, Ind.
 P. I. W.—See Pechstein Iron Works.
 Pechstein Iron Works, Ninth & Johnson Sts.,
 Keokuk, Ia. "P. I. W."

STANDS, TOOL—See Stands, Portable
 Tool

STANDS, WASH STAND LIGHT—See
 Lights, Wash Stand

STAPLES, Insulated

(Fibre insulated staples for car wiring)

Blake Signal & Mfg. Co., Boston, Mass.
 (See page 413.)

STARTER BRUSHES—See Brushes, Mag-
 neto, Starter and Generator

STARTER BUSHINGS—See Bushings,
 Starter or Primer Attaching

STARTER COILS—See Windings, Starter
 and Ignition

STARTER GEARS, AUTOMATIC—See
 Gears, Automatic Starter Transmission

STARTER REPAIR PARTS—See Parts,
 Magneto, Coil and Distributor

STARTER SWITCHES—See Switches, Elec-
 tric Starter

STARTER WINDINGS—See Windings,
 Starter and Ignition

STARTERS, AIR—See Starters, Com-
 pressed Air

**STARTERS, Airplane Compressed
Air Engine**

Buffalo Pressed Steel Co., Buffalo, N. Y.
 Christensen Engineering Co., 425 E. Water St.,
 Milwaukee, Wis.
 Liberty—See Motor Starter and Air Pump Co.
 Motor Starter & Air Pump Co., 52-60
 Dickerson St., Newark, N. J. "Perfect,"
 "Liberty." (See page 515.)
 Perfect—See Motor Starter & Air Pump Co.

STARTERS, Airplane Electric Engine

Bijur Motor Appliance Co., Hoboken, N. J.
 (See page 453.)

STARTERS, Compressed Air Engine

Christensen Engineering Co., 425 E. Water St.,
 Milwaukee, Wis.
 Lipman Pump Works, 100 Shirland Ave.,
 Beloit, Wis.
 Smith, Irvin C., 1243 W. Pico St., Los An-
 geles, Cal.

**STARTERS, Compressed Air Engine,
for Fords**

Air Device Co., 2975-77 Cottage Grove Ave.,
 Chicago, Ill. "Ten Eyck."
 Kellogg Mfg. Co., Rochester, N. Y.
 (See page 753.)
 Stewart-Warner Speedometer Corp., Chi-
 cago, Ill. (See page 1063.)
 Ten Eyck—See Air Device Co.

**STARTERS, COMPRESSED AIR MOTOR
BOAT**—See Starters, Motor Boat Com-
 pressed Air

STARTERS, COMPRESSED AIR TRACTOR
 —See Starters, Tractor Compressed Air

STARTERS, Electric Engine

American Bosch Magneto Corp., (Brightwood)
 Springfield, Mass. "Bosch."
 Auto-Lite—See Electric Auto-Lite Corp.
 Bijur Motor Appliance Co., Hoboken,
 N. J. (See page 453.)
 Bosch—See American Bosch Magneto Corp.
 Dayton Engineering Laboratories Co., 329 E.
 First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laborato-
 ries Co.
 Dyneto Electric Corp., Syracuse, N. Y.
 (See page 451.)
 Electric Auto-Lite Corp., Toledo, O. "Auto-
 Lite."
 Huff—See Simms Magneto Co.
 L-N—See Leece-Neville Co.
 Leece-Neville Co., 6363 Hamilton Ave., Cleve-
 land, O. "L-N."

Everything is listed under the NOUN or principal word

Replacement Springs
offering
Bigger Profits
for Dealers



for all makes of Cars

Only the finest carbon or alloy steel used. These are scientifically heat-treated and tempered in oil. Results in utmost resiliency combined with endurance.

15000 SPRINGS
ALWAYS IN STOCK

Instant delivery no matter what make of car. Every spring bears our long time guarantee of satisfaction or money back quick. For faster service and bigger profits sell Maremont Springs.

Write to-day for our Catalogue and extraordinary offer

Maremont Mfg. Co.

916-918 S. Wabash Ave. Chicago
534-538 W. 58th St. New York City

PELLET MAGNETO COMPANY

The Pioneer Starting, Lighting and Ignition Institution.

We have just completed our new 224-page catalog, exclusively confined to Starting, Lighting and Ignition. Register to-day for a copy. It contains valuable information pertaining to your every day requirements.

Send your repair work to America's most complete equipped shop. Prompt and dependable service.

25th & Wabash Avenue
Chicago, Ill.

ZENITE METAL COMPANY

ALITE AND LEATHER MOULDINGS

Stampings Windshields Foot Rails

201-203-205 N. West Street, Indianapolis

Duckwall Belting & Hose Co.

CLUTCH LEATHERS

201-203-205 N. West Street

INDIANAPOLIS



Light and Heavy Metal STAMPINGS

MANUFACTURERS of STRIP STEEL
HOT and COLD ROLLED

Worcester Pressed Steel Company
Worcester, Massachusetts
BRANCH OFFICES:—New York, Chicago, Detroit, Indianapolis

Please mention The Automobile Trade Directory

STARTERS, Electric Engine (Continued)

North East Electric Co., Rochester, N. Y.
(See page 525.)
Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
Simms Magneto Co., 377 N. Arlington Ave., East Orange, N. J. "Huff."
Wagner Electric Mfg. Co., 6409 Plymouth Ave., St. Louis, Mo.
Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass.
(See pages 926 and 927.)

STARTERS, Electric Engine, for Fords

Dyneto Electric Corp., Syracuse, N. Y.
(See page 451.)
Fisher Electrical Works, 1014 Lynn St., Detroit, Mich.
Heinze-Springfield—See Service Products Co.
Liberty Starter Co., 702 W. Jefferson Ave., Detroit, Mich.
Liberty Starters Corp., 5 Columbus Circle, New York, N. Y.
Pellet Magneto Co., 25th St. & Wabash Ave., Chicago, Ill. (See page 901.)
Service Products Co., Greenawalt Bldg., Springfield, O. "Heinze-Springfield."
Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass.
(See pages 926 and 927.)

STARTERS, ELECTRIC ENGINE, MOTOR BOAT—See Starters, Motor Boat Electric Engine**STARTERS, ELECTRIC ENGINE TRACTOR—See Starters, Tractor Electric Engine****STARTERS, Gasoline or Vapor Engine**

(For Priming Devices—See Primers, Gasoline Engine)

Automatic Starter Co., 418 N. Third St., St. Louis, Mo.
Brown-Maddock Co., West Newbury, Mass.
Markham Co., W. D. Clarksdale, Miss.

STARTERS, Impulse

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
Beehler Electrical Equipment Co., Yuma, Colo.
Bosch—See American Bosch Magneto Corp.
Kingston—See Kokomo Electric Co.
Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
Lauraine Magneto Co., 13th St. & Ely Ave., Long Island City, N. Y.
Safety Impulse Starter Co., 325 N. 15th St., Philadelphia, Pa.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J.

STARTERS, LEVER ENGINE—See Starters, Manual**STARTERS, Manual, Pedal or Lever Engine**

(See also Cranks, Safety Starting)

Pres-Toe—See Robertson Machine & Foundry Co.
Robertson Machine & Foundry Co., W. Buffalo, N. Y. "Pres-Toe."

STARTERS, Manual, Pedal or Lever Engine, for Fords

Acme—See Industrial Mfg. Co.
American Simplex Co., 2101 W. 16th St., Anderson, Ind. "Simplex."
American Starter Co., Anderson, Ind. "Simplex."
Ballard, Henry, Patterson, N. Y.
Barrett Motor Starter Mfg. Co., 1777 Broadway, New York, N. Y.
Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill. "Sandbo."
Ezy—See Star Specialty Mfg. Co.
Handee—See Racine Handy Mfg. Co.
Industrial Mfg. Co., 101-08 E. Fifth Ave., Chicago, Ill. "Acme," "O. K."
Little Giant Starter Co., 139 Cleveland Ave. S. W., Canton, O.
Miller Mer. Co., Memphis, Mo.
Murphy Starter Co., Ida Grove, Ia.
O. K.—See Industrial Mfg. Co.
Peoria—See United Co.
Pres-Toe—See Robertson Machine & Foundry Co.
Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
Relax Co., 2118 Monroe Ave., Norwood, O.
Robertson Machine & Foundry Co., 54-55 Rano St., Buffalo, N. Y. "Pres-toe."
Sandbo—See Bear Mfg. Co.
Sleverkropp Engine Co., DeKoven & N. W. Tracks, Racine, Wis.
Simplex—See American Simplex Co.
Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Ezy," (See page 865.)
3 in 1 Starter Co., 2309 Bosworth Ave., Chicago, Ill.
United Co., 3501 S. Washington St., Peoria, Ill. "Peoria."
Warnerlite Products Corp., Davenport, Iowa.

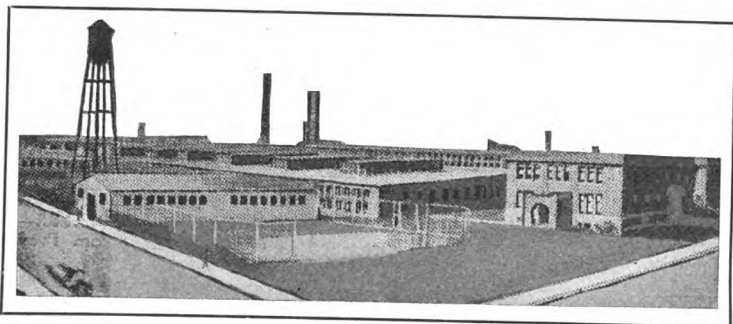
STARTERS, Mechanical or Spring Engine, for Fords

American Automobile Accessories Co., 1709 Blue Rock St., Cincinnati, O. "Crosley."
Crosley—See American Automobile Accessories Co.
M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich. "Peerless."
Neher, L. M., Warsaw, Ind.
Peerless—See M. N. & E. Sales Co.
Rockway Starter Co., Lincoln Ave., Waukesha, Wis.
Three-in-One Starter Co., 2309 Bosworth Ave., Chicago, Ill.

STARTERS, Motor Boat Compressed Air Engine

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

Everything is listed under the NOUN or principal word



SMITHVILLE

SMITH

PRESSED STEEL FRAMES

*Made in the LARGEST
and BEST EQUIPPED
Frame Plant in the World*

We are also quantity
producers of PRESSED
STEEL SHAPES of all
kinds and sizes.

A. O. SMITH CORPORATION
MILWAUKEE

Detroit Office—708 Ford Building

Please mention The Automobile Trade Directory

STARTERS, Motor Boat Electric Engine

North East Electric Co., Rochester, N. Y.
(See page 525.)
Simms Magneto Co., 277 N. Arlington Ave.,
East Orange, N. J.

STARTERS, Motor Boat Rear Engine

Gardner—See Lakeland Motor Works.
Joe's—See Snow & Petrelli Mfg. Co.
Lakeland Motor Works, Lakeland, Mich.
"Gardner."
Marine Wheel Co., 4450 Market Ave., Grand
Rapids, Mich.
Snow & Petrelli Mfg. Co., 152 Brewery St.,
New Haven, Conn. "Joe's."

STARTERS, PEDAL ENGINE—See Starters, Manual**STARTERS, SPRING ENGINE for Fords—See Starters, Mechanical****STARTERS, Tractor Compressed Air Engine**

Christensen Engineering Co., 425 E. Water
St., Milwaukee, Wis.

STARTERS, Tractor Electric Engine

North East Electric Co., Rochester, N. Y.
(See page 525.)
Remy Electric Co., 1633 E. Grand Blvd., De-
troit, Mich.
Simms Magneto Co., 277 N. Arlington Ave.,
East Orange, N. J.

STARTERS, VAPOR ENGINE—See Starters, Gasoline**STARTING CRANK HANDLES—See Handles, Starting Crank****STARTING CRANK HOLDERS—See Holders, Starting Crank****STARTING CRANK LOCKS—See Locks, Starting Crank****STARTING CRANKS, SAFETY — See Cranks, Safety****STATIONS, Electric Service**

(Covering only electric service stations who advertise in this publication)

Pellet Magneto Co., 25th & Wabash Ave.,
Chicago, Ill. (See page 901.)
U. S. Auto Supply Co., 3845 S. Wabash
Ave., Chicago, Ill. (See page 745.)

STATOSCOPES, Aircraft

Custer Specialty Co., 119 Franklin St., Day-
ton, O.
Schneider Bros. Instrument Co., 350-52 Pal-
sade Ave., Jersey City, N. J.
Springwether Instrument Co., W. F. Ozark
Bldg., St. Louis, Mo.

STEADIERS, STEERING GEAR — See Checks, Steering Gear**STEADY BEARINGS—See Bearings, Drive Shaft Steady****STEAM BOILERS—See Boilers, Steam****STEAM GAGES—See Gages, Steam****STEAM HAMMERS—See Hammers, Steam****STEAM MOTORS—See Engines, Steam****STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure****STEAM PUMPS—See Pumps, Steam****STEAM STORAGE BATTERY OPENING—See Steamers, Storage Battery.****STEAM TIRE CURING BAGS—See Bags, Steam Tire Curing****STEAMERS, Storage Battery**

(Apparatus for softening the sealing compound on storage batteries by means of steam)

Ambu—See American Bureau of Engineering.
American Bureau of Engineering, Michi-
gan Ave. & 16th St., Chicago, Ill.
"Ambu." (See page 659.)

Boulton—Perrigo Mfg. Co., 1126 W. Second
St., Oklahoma City, Okla. "Scottie."

Electrical Testing Co., 300-02 Knoxville
Ave., Peoria, Ill. (See page 905.)

Gillmore Specialty Co., St. Paul, Minn.
"Plaskett."

Globe Machine & Stamping Co., W. 76th
St., Cleveland, O. "Sepco."
(See page 1039.)

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn,
N. Y.

Ibsco—See Illinois Battery Steamer Co.
Illinois Battery Steamer Co., 607 Spencer St.,
Peoria, Ill. "Ibsco."

Orum, S. R. M., 5143 Keyser St. (No. Phila.),
Philadelphia, Pa.

Plaskett—See Gillmore Specialty Co.
Reliable Mfg. Co., 2819 Prospect Ave., Cleve-
land, O.

Scottie—See Boulton-Perrigo Mfg. Co.
Sepco—See Globe Machine & Stamping Co.

Shonta Co., H. B., Dept. C, 161 W. 64th St.,
New York, N. Y. (Dealers.)
(See page 177.)

STEEL or Iron, Angle, Channel and Tee

Bethlehem Steel Co., Third & Poplar Sts.,
South Bethlehem, Pa.

Cambria Steel Co., Johnstown, Pa.

Carnegie Steel Co., Carnegie Bldg., Pittsburgh,
Pa.

Illinois Steel Co., 203 S. La Salle St., Chicago,
Ill.

Inland Steel Co., First National Bank Bldg.,
Chicago, Ill.

Interstate Iron & Steel Co., 104 S. Michi-
gan Ave., Chicago, Ill. (See page 905.)

Jones & Laughlin Steel Co., Jones & Laughlin
Bldg., Pittsburgh, Pa.

Lockhart Iron & Steel Co., McKees Rocks,
Pa. "Vulcan."

Everything is listed under the NOUN or principal word

ELECTRIC STARTING - LIGHTING - IGNITION EXPERTS



Official Service Station for

Westinghouse
North-East
Stimms-Hull
Auto-Lite
Eber
Connecticut

Detroit
Klaxon
Remy
Kington
Splindorf
Dixie

K-W
Phillips
Keweenaw
Sims
Norma Bearings
Webster

Philadelphia Diamond Grid Storage Batteries

ELECTRICAL TESTING CO.

PEORIA

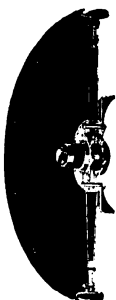
300-02 Knoxville Ave.

ILLINOIS

HALL

FLEXIBLE STEEL DISC WHEELS

Think of a wheel that actually absorbs shocks, that protects the chassis from destructive vibration! That is what the Hall Wheel does. In addition it is handsome, strong, rustless—and has demountable rims.



Flexible Fabric disc that absorbs all shocks.

Best quality steel discs to which fabric disc is riveted.

Not necessary to change hubs with Hall Wheels. Crystallization entirely eliminated.

Hall Wheels lengthen the life of the car—and enhance its beauty.

Let us explain agency proposition.

Also manufacturers of Hall Felt Inner Liner

Hall Syndicate, Inc.

1310 Commonwealth Bldg.,
Philadelphia, Pa.

Interstate

OPEN HEARTH ALLOY STEELS

IRON AND STEEL BARS AND SHAPES

WIRE PRODUCTS NAILS, TACKS AND STAPLES

Interstate Iron & Steel Company

104 South Mich. Ave.
Chicago

Sales offices in New York, Cleveland, Detroit, Milwaukee, St. Paul, St. Louis, Kansas City and San Francisco.

Iron and Steel Products

MR. MANUFACTURER! *If your catalog is not on file in our office there is at least the chance that some of your new products are not properly listed in The Automobile Trade Directory.*

The Automobile Trade Directory is as nearly infallible as it is possible for unceasing vigilance to make it. An easy way to make sure is to put us on your mailing list, to send us your catalogs and other trade literature regularly.

Thousands of buyers are interested in what you are doing and they invariably use The Automobile Trade Directory as the bridge over which they reach the supply—the same bridge over which you must successfully reach your market.

The Automobile Trade Directory
243 W. Thirty-ninth Street New York City

Let us have your catalogs

Please mention The Automobile Trade Directory

STEEL OR IRON, Angle, Channel and Tee (Continued)

Logan Iron & Steel Co., 1421 Chestnut St., Philadelphia, Pa.
 Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 415.)
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Vulcan—See Lockhart Iron & Steel Co.

STEEL BALLS—See Balls, Steel

STEEL or Iron, Bar

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Argo—See Illingsworth Steel Co.
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Cambria Steel Co., Johnstown, Pa.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
 Inland Steel Co., First National Bank Bldg., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
 Lackawanna Steel Co., Lackawanna, N. Y.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lockhart Iron & Steel Co., McKees Rocks, Pa. "Vulcan."
 Logan Iron & Steel Co., 1421 Chestnut St., Philadelphia, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Pardee Works, C. Herbert & Market Sts., Perth Amboy, N. J.
 Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 415.)
 Railway Steel Spring Co., 30 Church St., New York, N. Y.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Simonds Mfg. Co., Lockport, N. Y. (See page 909.)
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Universal Steel Co., Bridgeville, Pa.
 Vulcan—See Lockhart Iron & Steel Co.

STEEL CASTINGS—See Castings, Steel

STEEL, CHANNEL—See Steel, Angle

STEEL, Chrome

American Stainless Steel Co., 1547 Oliver Bldg., Pittsburgh, Pa. (See page 907.)
 Atlas Crucible Steel Co., Dunkirk, N. Y.
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Carpenter Steel Co., Reading, Pa.
 Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.

Firth-Sterling Steel Co., McKeesport, Pa.
 Halcomb Steel Co., Syracuse, N. Y.
 Haynes & Son, Kokomo, Ind.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Washington Steel & Ordnance Co., Washington, D. C.

STEEL, Chrome Nickel

Agathon—See Central Steel Co.
 American Import & Export Co., 150 Nassau St., New York, N. Y. (Importers.)
 American Stainless Steel Co., 1547 Oliver Bldg., Pittsburgh, Pa. (See page 907.)
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arbo—See Carbon Steel Co.
 Argo—See Illingsworth Steel Co.
 Arrow—See Crowley Co.
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Arbo," "Decco," "Shrapo."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa. "Samson."
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Simplex," "Duplex."
 Decco—See Carbon Steel Co.
 Duplex—See Crucible Steel Co. of America.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Hehtemnd."
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 908.)
 Halcomb Steel Co., Syracuse, N. Y.
 Hehtemnd—See Fairley-Davidson Steel Co.
 Hercules Electric Steel Corp., 127-45 Lafayette St., New York, N. Y. "Urite."
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
 McInnes Steel Co., Corey, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Roebling Electro Steel Co., 178-77 Lafayette St., New York, N. Y. (Importers.)
 Samson—See Carpenter Steel Co.
 Shrapo—See Carbon Steel Co.
 Simplex—See Crucible Steel Co. of America.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 907.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O. "Tusco."
 Universal Steel Co., Bridgeville, Pa.
 Urite—See Hercules Electric Steel Corp.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

Everything is listed under the NOUN or principal word

STAINLESS STEEL

"Neither Rusts, Stains Nor Tarnishes"

WHY IT IS BETTER

Because it is a high-chromium alloy steel; because it represents an advance in metallurgy. It combines the good qualities of bronze with those of the best grades of heat-treated steels.

It has a high tensile strength and is tough; is highly resistant to the action of most of the common corrosive agents; withstands exceedingly high temperatures without pitting or scaling.

Stainless can be forged, hardened, tempered and annealed without radical departure from ordinary methods. It should therefore be of especial interest to both the mechanical and the automotive engineer.

LICENSEES

Atlas Crucible Steel Co.
Dunkirk, N. Y.
Bethlehem Steel Co.
Bethlehem, Pa.
Carpenter Steel Co.
Reading, Pa.
Columbia Tool Steel Co.
Chicago Heights, Ill.
Crucible Steel Company of America.
New York City, N. Y.
Firth-Sterling Steel Co.
McKeesport, Pa.
Halcomb Steel Co.
Syracuse, N. Y.
Haynes & Son
Kokomo, Ind.
Hess Steel Corporation
Baltimore, Md.
Latrobe Electric Steel Co.
Latrobe, Pa.
Midvale Steel & Ordnance Co.
Philadelphia, Pa.
Simonds Manufacturing Co.
Pittsburg, Mass.
Vanadium-Alloys Steel Co.
Latrobe, Pa.
Vulcan Crucible Steel Co.
Alliquippa, Pa.
Washington Steel & Ordnance Co.
Washington, D. C.

THE AMERICAN STAINLESS STEEL COMPANY

1547 OLIVER BUILDING

PITTSBURGH, PA.

UNION DRAWN STEEL CO.

WORKS:

BEAVER FALLS, PA.

and

GARY, IND.

**C o l d
D r a w n**

or

**T u r n e d
a n d
P o l i s h e d**

Shafting

Screw Steels { Bessemer
Open Hearth

Alloy Steels { Nickel—1% and 3¼%
Nickel Chromium
Chromium
(Heat Treated or Not) { Chromium—Vanadium, etc.

Axles

Piston Rods

Special Shapes

Special Case-Hardening Steels

**Cold Finished Bessemer, Open Hearth, Crucible and
Electric Furnace Steels**

Branches and Warehouses:

NEW YORK

DETROIT

CINCINNATI

PHILADELPHIA

CHICAGO

Sales Offices: Boston and Buffalo

Please mention The Automobile Trade Directory

STEEL CLUTCH DISCS—See Discs, Steel**STEEL, Cold Rolled Bar**

Cambria Steel Co., Johnstown, Pa.
 Columbia Steel & Shafting Co., Pittsburgh, Pa.
 Compressed Steel Shafting Co., 1587 Hyde Park Ave. (Readville), Boston, Mass.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Cumberland Steel Co., William St. & B. & O. R. R., Cumberland, Md.
 Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
 Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Moltrup Steel Products Co., Beaver Falls, Pa. (See page 909.)
 National Drawn Steel Co., East Liverpool, O.
 Pardee Works, C. Herbert & Market Sts., Perth Amboy, N. J.
 Peerless Drawn Steel Co., Massillon, O.
 Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 907.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Witherow Steel Co., Keystone Bldg., Pittsburgh, Pa.

STEEL, Cold Rolled Strip

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Bordentown Steel & Tube Corp., Bordentown, N. J.
 Carpenter Steel Co., Reading, Pa.
 Columbia Steel Co., Elyria, O.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Elyria Iron & Steel Co., Cleveland, O. (See page 1011.)
 Greer Steel Co., Dover, O.
 Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.
 Moltrup Steel Products Co., Beaver Falls, Pa. (See page 909.)
 Morris & Bailey Steel Co., Pittsburgh, Pa.
 Peerless Drawn Steel Co., Massillon, O.
 Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
 Stanley Works, (Special Productions Dept.), New Britain, Conn. (See page 491.)
 Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.
 Weirton Steel Co., Weirton, W. Va.
 West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

STEEL CRADLES, PORTABLE—See Cradles, Portable Steel**STEEL CUTTING—See Steel, High-Speed Cutting; also Steel, Self-Hardening****STEEL, Hot Rolled Strip**

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Bordentown Steel & Tube Corp., Bordentown, N. J.
 Elyria Iron & Steel Co., Cleveland, O. (See page 1011.)
 National Pressed Steel Co., Massillon, O. "Robal."
 Robal—See National Pressed Steel Co.
 Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.
 Weirton Steel Co., Weirton, W. Va.
 West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

STEEL, Dealers in

(Comprising only Dealers in Iron, Steel and other metals who advertise in this publication)

Morris & Co., E. K., 311-17 W. Second St., Cincinnati, O. (See page 1029.)

STEEL FAN PULLEYS—See Pulleys, Pressed Steel Fan**STEEL, High-Speed Cutting**

Albion—See Hobson, Houghton & Co.
 Allen & Co., Edgar, 715 W. Lake St., Chicago, Ill. (Importers.)
 Andrew & Co., J. H., 26 Cortlandt St., New York, N. Y. (Importers.) "Toledo."
 Ark—See Jessop & Sons.
 Arrow—See Crowley Co.
 Atlas Crucible Steel Co., Dunkirk, N. Y.
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Steel Co., Taunton, Mass.)
 Blancke Steel Co.—See Blancke Co.
 Bohlers—See Houghton & Richards.
 Burgess—See Cyclops Steel Co.
 Carpenter Steel Co., Reading Pa. "Star Zenith."
 Clarite—See Columbia Tool Steel Co.
 Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa.
 Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill. "Clarite."
 Como—See Darwin & Milner.
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Rez."
 Cyclops Steel Co., 265 E. Spring St., Titusville, Pa. "Burgess."
 Darwin & Milner, 403 Long Ave., Cleveland, O. "Como." (Importers.)
 Dreadnought—See Halcomb Steel Co.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "X-tof," "Rushloff."
 Fearless—See Hobson, Houghton & Co.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 909.)
 Halcomb Steel Co., Syracuse, N. Y. "Dreadnought."
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
 Heller Bros. Co., 865 Mt. Prospect Ave., New York, N. Y.

Everything is listed under the NOUN or principal word



Frasse-Electric and Open-Hearth Automobile **STEELS**

ALL GRADES AND FINISHES

Heat-Treating-Annealing-Case-Hardening

Interesting "BOOK OF STEELS" sent on request

Manufacturers

FRASSE STEEL WORKS, Inc.
Hartford, Conn.

Distributors

PETER A. FRASSE & CO., Inc.
417 Canal St., New York City
PHILADELPHIA — BUFFALO

MOLTRUP'S

ACCURATELY FINISHED FREE CUTTING COLD DRAWN SCREW STEEL

Is specified by particular manufacturers of high grade automotive parts.

ROUNDS — HEXAGONS — SQUARES — FLATS

COLD DRAWN SHAFTING & SPECIAL SHAPES

Other Moltrup Products

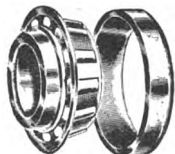
FINISHED MACHINE KEYS STANDARD WOODRUFF KEYS FINISHED MACHINE RACK
FLATTENED, GROUND AND POLISHED STEEL
PLATES AND DISCS FOUNDRY PATTERN PLATES FINISHED CRANK SHAFTS

MOLTRUP STEEL PRODUCTS CO., Beaver Falls, Pa.

"JOY" ROLLER BEARINGS

**PISTON RING
CASTINGS
MALLEABLE
CASTINGS**

Steel, Gray Iron,
Brass, Bronze and
Aluminum



For Ford and Chevrolet

FORGINGS

SPECIAL RATIO

CUT GEARS

MACHINE WORK
TO ORDER

REPAIR PARTS
FOR FORDS

CHICAGO STANDARD PARTS COMPANY
CHICAGO 39 West Adams Street ILLINOIS

SIMONDS

HIGH GRADE ELECTRIC AND CRUCIBLE FURNACE SPECIAL ALLOY STEEL

SHEETS
AND
BARS

STEEL

SIMONDS
MFG. CO.
LOCKPORT, N.Y.

Please mention The Automobile Trade Directory

STEEL, High-Speed Cutting (Continued)

Hercules Electric Steel Corp. 137-45 Lafayette St., New York, N. Y. "Urite."
 Hobson, Houghton & Co., 32 Beekman St., New York, N. Y. (Importers.) "Albion," "Fearless."
 Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlera."
 Improved Capital—See Ward's Sons Co.
 Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.) "Ark."
 L-XX—See Atlas Crucible Steel Co.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa.
 Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
 Ludlum Steel Co., Watervliet, N. Y. "Mohawk."
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
 McInnes Steel Co., Corry, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Mohawk—See Ludlum Steel Co.
 Onondaga Steel Co., 1114 E. Water St., Syracuse, N. Y.
 Red Cut Superior—See Vanadium-Alloys Steel Co.
 Rex—See Crucible Steel Co. of America.
 Roebling Electro Steel Co., 178-77 Lafayette St., New York, N. Y. (Importers.)
 Rushitoff—See Fairley-Davidson Steel Co.
 Star Zenith—See Carpenter Steel Co.
 Toledo—See Andrew & Co.
 Universal Steel Co., Bridgeville, Pa.
 Urite—See Hercules Electric Steel Corp.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Red Cut Superior."
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Tusco—See United Alloy Steel Co.
 Ward's Sons Co., Edgar T., Boston, Mass. (Importers.) (See page 1033.)
 X-tof—See Fairley-Davidson Steel Co.

STEEL LETTERS—See Stamps, Steel

STEEL, Manganese

American Manganese Steel Co., 322 S. Michigan Ave., Chicago, Ill.
 McCord & Co., 122 S. Michigan Ave., Chicago, Ill.
 Universal Steel Co., Bridgeville, Pa.

STEEL MATS FOR FORDS—See Mats, Floor Board

STEEL MOLDING—See Molding, Steel

STEEL, Nickel

Aegis—See United Alloy Steel Co.
 Agathon—See Central Steel Co.
 Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arrow—See Crowley Co.
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)

Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Nico."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa.
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Electro Steel Co., Pittsburgh, Pa.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Heitemnd."
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 909.)
 Halcomb Steel Co., Syracuse, N. Y.
 Heitemnd—See Fairley-Davidson Steel Co.
 Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)
 Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 La Salle Steel Co., 2205 S. Halsted St., Chicago, Ill.
 Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Nico—See Carbon Steel Co.
 Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
 Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 907.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O. "Aegis."
 Universal Steel Co., Bridgeville, Pa.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

STEEL NUMBERS—See Stamps, Steel

STEEL RING GEARS—See Gears, Steel Ring

STEEL, Self-Hardening Cutting

Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Argo—See Illingsworth Steel Co.
 Blue Clip—See Firth-Sterling Steel Co.
 Firth-Sterling Steel Co., McKeesport, Pa. "Blue Clip."
 Halcomb Steel Co., Syracuse, N. Y.
 Hobson, Houghton & Co., 32 Beekman St., New York, N. Y. (Importers.) "Soho."
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.)
 Soho—See Hobson, Houghton & Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa. "Wolfram."
 Wolfram—See Vulcan Crucible Steel Co.

STEEL, Sheet

Allegheny Steel Co., Brackenridge, Pa.
 American Rolling Mill Co., Middletown, O. "Middletown."
 American Sheet & Tin Plate Co., Fritch Bldg., Pittsburgh, Pa. "Thurite."
 (See page 911.)

Everything is listed under the NOUN or principal word



AUTOMOBILE Sheets

Automobile Body Stock
Automobile Fender and Hood Stock
Automobile Crown Fender Stock

Careful and thorough investigation of the requirements of automobile manufacturers, has resulted in the establishment of above three standard finishes, the modification of which in finish and forming qualities has enabled us to meet practically every phase of the industry to which sheet steel is adapted. Open Hearth Steel is used, as well as full pickled finish treatment—the products differing in the degree of finish and forming properties.

Deep Drawing Stock “THURITE”

For difficult drawings such as axle housings, radiator casings, hub caps, etc., we supply steels of special drawing qualities, the most capable of which is “THURITE”—a product which has astonished the fabricating world in its remarkable behavior under dies.

We manufacture Sheet and Tin Mill Products of every description and for every known purpose—Black Sheets, Galvanized Sheets, Special Sheets for Stamping, Long Terne Sheets, Enameling and Japanning Stock, Tin and Terne Plates, Black Plate, etc.



American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES

Chicago, Cincinnati, Denver, Detroit, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis
 Export Representatives: United States Steel Products Co., New York City
 Pacific Coast Representatives: United States Steel Products Co., San Francisco, Los Angeles, Portland, Seattle

STEEL, Sheet (Continued)

Apollo Steel Co., Apollo, Pa.
 Briar Hill Steel Co., Stambaugh Bldg.,
 Youngstown, O.
 Crowley, John A., 120-22 Liberty St., New
 York, N. Y.
 Electro Steel Co., Pittsburgh, Pa.
 Falcon Steel Co., Niles, O.
 Follansbee Bros. Co., Third & Liberty Aves.,
 Pittsburgh, Pa.
 Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 Inland Steel Co., First National Bank Bldg.,
 Chicago, Ill.
 La Belle Iron Works, Steubenville, O.
 La Salle Steel Co., 2305 S. Halsted St., Chi-
 cago, Ill.
 McCullough Iron Co., Wilmington, Del.
 McVoy Sheet & Tin Plate Co., 244-50 W. Mich-
 igan St., Chicago, Ill.
 Mahoning Valley Steel Co., Niles, O.
 Mansfield Sheet & Tin Plate Co., Mansfield, O.
 Massillon Rolling Mill Co., Massillon, O.
 Middletown—See American Rolling Mill Co.
 National Pressed Steel Co., Massillon, O.
 Newton Steel Co., Wick Bldg., Youngstown, O.
 Seneca Iron & Steel Co., Buffalo, N. Y.
 Simonds Mfg. Co., Lockport, N. Y.
 (See page 909.)
 Taylor Co., N. & G., 308 Chestnut St., Phila-
 delphia, Pa.
 Thurite—See American Sheet & Tin Plate Co.
 Universal Steel Co., Bridgeville, Pa.
 Youngstown Sheet & Tube Co., Youngstown, O.

**STEEL SHOP STOOLS—See Stools, Steel
Shop**

STEEL, Spring

Arrow—See Crowley Co.
 Bethlehem Steel Co., Third & Poplar Sts.,
 South Bethlehem, Pa.
 Cambria Steel Co., Johnstown, Pa.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh,
 Pa.
 Carpenter Steel Co., Reading, Pa.
 Crowley, John A., 120-22 Liberty St., New
 York, N. Y. "Arrow."
 Crucia—See United Alloy Steel Co.
 Crucible Steel Co. of America, Oliver Bldg.,
 Pittsburgh, Pa.
 Elastic—See United Alloy Steel Co.
 Excelsior—See Fairley-Davidson Steel Co.
 Fairley-Davidson Steel Co., 124 Maiden Lane,
 New York, N. Y. (Importers.) "Excelsior."
 Frasse & Co., Peter A., 417 Canal St.,
 New York, N. Y. (See page 909.)
 Halcomb Steel Co., Syracuse, N. Y.
 Harrow Spring Co.—See Steel Sales Co.
 Helmuth Co., L., 17 Battery Pl., New York,
 N. Y. (Importers.)
 Illinois Steel Co., 203 S. La Salle St., Chicago,
 Ill.
 Interstate Iron & Steel Co., 104 S. Michi-
 gan Ave., Chicago, Ill. (See page 905.)
 La Salle Steel Co., 2305 S. Halsted St., Chi-
 cago, Ill.
 Marlin-Rockwell Corp., 347 Madison Ave.,
 New York, N. Y.
 Midvale Steel & Ordnance Co., Widener Bldg.,
 Philadelphia, Pa.
 National Lock Washer Co., 40 Hermon St.,
 Newark, N. J.

Steel Sales Co., Jefferson & Adams Sts., Chi-
 cago, Ill. (Sole Distributors for Harrow
 Spring Co., Milwaukee, Wis.)
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 United Alloy Steel Co., Eighth St. Exten-
 sion, Canton, O. "Crucia." "Elastic."
 Universal Steel Co., Bridgeville, Pa.
 Vulcan Crucible Steel Co., First St., Alliquippa,
 Pa.

**STEEL SPOKED WHEELS—See Wheels,
Steel Spoked**

**STEEL STAMPINGS—See Stampings and
Pressings, Metal**

STEEL, TEE—See Steel, Angle

**STEEL TESTING INSTRUMENTS—See In-
struments, Metal Testing**

STEEL, Tool

Allen & Co., Edgar, 718 W. Lake St., Chicago,
 Ill. (Importers.)
 Andrew & Co., J. H., 26 Cortlandt St., New
 York, N. Y. (Importers.) "Toledo."
 Argo—See Illingsworth Steel Co.
 Arrow—See Crowley Co.
 Atlas Crucible Steel Co., Dunkirk, N. Y. "De-
 ward."
 Becker Steel Co. of America, 154 Nassau St.,
 New York, N. Y. (Importers.)
 Black Diamond—See Crucible Steel Co. of
 America.
 Blancke Co., L. C., 10-12 Thomas St., New
 York, N. Y. (Sole Distributors for Blancke
 Steel Co., Taunton, Mass.)
 Blancke Steel Co.—See Blancke Co.
 Bohlens—See Houghton & Richards.
 Bourne-Fuller Co., Hickox Bldg., Cleveland, O.
 Brown & Co., Tenth St. & Duquesne Way,
 Pittsburgh, Pa.
 Carbon Steel Co., ft. 32d St., Pittsburgh, Pa.
 "Weto," "Cromo."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh,
 Pa.
 Carpenter Steel Co., Reading, Pa.
 Colonial Steel Co., 324 Fourth Ave., Pitts-
 burgh, Pa. "Red Star."
 Columbia Tool Steel Co., 14th & Butterfield
 Sts., Chicago Heights, Ill.
 Connecticut Electric Steel Co., 540 Flatbush
 Ave., Hartford, Conn. "Phillipsite."
 Crescent—See Crucible Steel Co. of America.
 Cromo—See Carbon Steel Co.
 Crowley, John A., 120-22 Liberty St., New
 York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg.,
 Pittsburgh, Pa. "Black Diamond," "Cres-
 cent," "Sanderson."
 Cyclops Steel Co., 265 E. Spring St., Titus-
 ville, Pa.
 Dannemora—See Nash Co.
 Deward—See Atlas Crucible Steel Co.
 Eagle—See Le Moyne Steel Co.
 Electro Steel Co., Pittsburgh, Pa.
 Fairley-Davidson Steel Co., 124 Maiden Lane,
 New York, N. Y. (Importers.) "Fondwot."
 Firth-Sterling Steel Co., McKeesport, Pa.
 Fondwot—See Fairley-Davidson Steel Co.
 Frasse & Co., Peter A., 417 Canal St.,
 New York, N. Y. (See page 909.)

Everything is listed under the NOUN or principal word

STEEL, Tool (Continued)

Halcomb Steel Co. of Syracuse, N. Y. "Ketos."
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
 Heller Bros. Co., 865 Mt. Prospect Ave., New York, N. Y.
 Hess Steel Corp., Baltimore, Md.
 Hobson, Houghton & Co., 83 Beekman St., New York, N. Y. (Importers.)
 Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlers."
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa.
 Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.)
 Ketos—See Halcomb Steel Co.
 Lancaster Steel Products Co., Manheim Pike, Lancaster, Pa.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa. "Eagle."
 Lindenbergs Steel Co., 90 West St., New York, N. Y. (Importers.)
 Ludlum Steel Co., Watervliet, N. Y. "Pompton," "Seminole," "Silchrome."
 McInnes Steel Co., Corry, Pa.
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Phillipsite—See Connecticut Electric Steel Co.
 Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Pompton—See Ludlum Steel Co.
 Red Star—See Colonial Steel Co.
 Roehling Electric Steel Co., 173-77 Lafayette St., New York, N. Y. (Importers.)
 Sanderson—See Crucible Steel Co. of America.
 Seminole—See Ludlum Steel Co.
 Silchrome—See Ludlum Steel Co.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Toledo—See Andrew & Co.
 Trojan Electric Steel Co., 34th St. and Hoynes Ave., Chicago, Ill.
 Universal Steel Co., Bridgeville, Pa.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
 Vasco—See Vanadium-Alloys Steel Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Ward's Sons Co., Edgar T., Boston, Mass. "Dannemora." (Importers.) (See page 1033.)
 Weto—See Carbon Steel Co.

STEEL TUBE—See Tubing, Steel

STEEL, Vanadium

Agathon—See Central Steel Co.
 Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)
 Alva—See Crucible Steel Co. of America.
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arrow—See Crowley Co.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Alva."
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. (Importers.) "Hehtemnd."
 Halcomb Steel Co., Syracuse, N. Y.

Harrow Spring Co.—See Steel Sales Co.
 Hehtemnd—See Fairley-Davidson Steel Co.
 Hercules Electric Steel Corp., 137-43 Lafayette St., New York, N. Y. "Urite."
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Ludlum Steel Co., Watervliet, N. Y.
 McInnes Steel Co., Corry, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Steel Sales Co., Jefferson & Adams Sts., Chicago, Ill. (Sole Distributors for Harrow Spring Co., Milwaukee, Wis.)
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 907.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Urite—See Hercules Electric Steel Corp.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
 Vasco—See Vanadium-Alloys Steel Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

STEEL WASHERS—See Washers, Iron

STEEL WHEEL RIMS, AIRPLANE—See Rims, Airplane Wheel

STEEL WHEELS—See Wheels, Cast Steel; also Wheels, Tractor Steel

STEEL WIRE—See Wire

STEEL WIRE BROOMS—See Brooms, Steel Wire

STEEL WOOL—See Wool, Steel

STEERING APPARATUS—See Gears, Steering

STEERING COLUMN BRACES FOR FORDS—See Braces, Steering Column

STEERING COLUMN CONTROLS—See Controls, Dash and Steering Column Carburetor

STEERING COLUMN SILENCERS FOR FORDS—See Braces, Steering Column

STEERING CONNECTIONS—See Connections, Steering

STEERING CONNECTIONS FOR FORDS—See Links, Steering

STEERING DEVICES—See Checks, Steering Gear

STEERING GEAR CHECKS—See Checks, Steering Gear

STEERING GEAR LOCKS FOR FORDS—See Locks, Steering Gear

STEERING GEAR STEADYING DEVICES—See Checks, Steering Gear

Everything is listed under the NOUN or principal word

STEERING GEAR STOPS—See Stops, Steering Gear

STEERING GEAR STRUTS—See Cheeks, Steering Gear

STEERING GEARS—See Gears, Steering

STEERING GUIDES, TRACTOR—See Guides, Tractor Steering

STEERING KNUCKLE BOOTS—See Boots, Steering Knuckle

STEERING KNUCKLE BUSHING MILLS FOR FORDS—See Mills, Steering Knuckle Bushing

STEERING KNUCKLES—See Forgings, Drop

STEERING LINKS FOR FORDS—See Links, Steering

STEERING RINGS, QUICK DETACHABLE TRACTOR—See Rings, Tractor Quick Detachable Steering

STEERING ROD SILENCERS FOR FORDS—See Anti-Rattlers, Steering Rod

STEERING RODS FOR FORDS—See Links, Steering

STEERING WHEEL CLOCKS FOR FORDS—See Clocks, Steering Wheel

STEERING WHEEL COVERS—See Covers, Steering Wheel Rim

STEERING WHEEL LOCKS—See Locks, Steering Wheel

STEERING WHEEL RIMS—See Rims, Wood Steering Wheel; also Rims, Rubber Steering Wheel

STEERING WHEEL SWITCHES—See Switches, Steering Wheel

STEERING WHEELS—See Wheels, Steering

STEERING WHEELS, ELECTRICALLY HEATED—See Warmers, Hand

STEM ADJUSTERS—See Adjusters, Valve Stem

STEP BOLTS—See Bolts, Machine and Carriage

STEP HANGERS—See Hangers, Pressed Steel Step

STEP MATS—See Mats, Running Board

STEP PLATES—See Plates, Heel, Pedal or Step

STEPS, FORGED—See Forgings, Drop

STEPS AND RUNNING BOARDS—See Boards, Running

STERN BEARINGS, MOTOR BOAT—See Bearings, Motor Boat Stern

STETHOSCOPES, MOTOR TESTING—See Instruments, Engine Testing

STICKS, AIRPLANE—See Parts, Wood

STILLS, Water

(For distilling water for use in storage batteries)

Barnstead Still & Sterilizer Co., 2 Lanesville Terrace (Forest Hills), Boston, Mass.

Boulton-Perrigo Mfg. Co., 1126 W. Second St., Oklahoma City, Okla. "Wampus Kat."

Cleveland Water Still Co., 500 Prospect Ave., Cleveland, O.

Eureka—See Lattner Mfg. Co.

Genco—See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Kline, Maurice, 3216 N. Newkirk St., Philadelphia, Pa.

Lalor Co., W. M., 431 S. Dearborn St., Chicago, Ill. "Rochlitz."

Latimer Mfg. Co., Ludington, Mich.

Lattner Mfg. Co., P. M., 515 F Ave., W., Cedar Rapids, Iowa. "Eureka."

Link Co., A. P., 223 73d St., Brooklyn, N. Y.

Precision Steam Meter Co., 820-22 S. Tripp Ave., Chicago, Ill.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Rochlitz—See Lalor Co.

Sargent Steam Meter Co., 800-02 Sibley St., Chicago, Ill.

Shonta Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. (Dealers.)

(See page 177.)

Standard Water Systems Co., Hampden, N. J. "Tripure."

Stokes Machine Co., F. J., 17th & Cambria Sts., Philadelphia, Pa.

Tripure—See Standard Water Systems Co.

Wampus Kat—See Boulton-Perrigo Mfg. Co.

STITCHING MACHINES—See Machines, Double Tread Tire Stitching

STOCK RACKS—See Racks, Metal Tool

STOCKS, Die

Acme—See American Tap & Die Co.

Adamantine—See American Tap & Die Co.

American Tap & Die Co., Greenfield, Mass. "Acme," "Adamantine."

(See page 915.)

Armstrong Mfg. Co., 335 Knowlton Ave., Bridgeport, Conn.

Bealy & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y.

Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt.

Card Mfg. Co., S. W., Mansfield, Mass.

Carpenter Tap & Die Co., J. M., Pawtucket, R. I.

Conant & Donelson Co., Conway, Mass. "Re Hable."

Duplex—See Hart Mfg. Co.

Economy—See Greenfield Tap & Die Corp.

GTD—See Greenfield Tap & Die Corp.

Green River—See Greenfield Tap & Die Corp.

Everything is listed under the NOUN or principal word

Look for  this Mark

SCREW PLATES, TAPS, DIES, REAMERS, PIPE
TOOLS, MACHINE TOOLS
for AUTOMOTIVE USE



Both "USS" and "SAE" Threads



GREENFIELD, MASSACHUSETTS
Canadian Plant: Greenfield Tap & Die Corporation of Canada, Limited, Calt, Ontario
SEND FOR SMALL TOOL CATALOG (701)

— action

—with the New Stromberg Carburetor is as quick as thought. A rush of power instantly follows the demand on your engine. Efficiency is always on its finest edge. On the traffic choked boulevard or out in the open stretches, you are master. You can slow down to a snail's pace—surge ahead at express speed—stop—start, at will—your machine is under control.

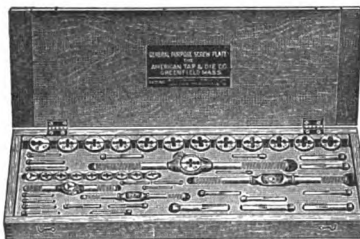
In addition to this—you get most miles per gallon. These are facts—proved absolutely by service and fully explained in literature, which will be sent you upon request. Write for it. State name, year and model of your car.

Stromberg Motor Devices Co.
Dept. 420, 64 E. 25th St.
CHICAGO, ILLINOIS



New STROMBERG Does it!
CARBURETOR

GENERAL PURPOSE SCREW-PLATE THREE SCREW-PLATES IN ONE



Most complete and useful set ever offered. Machine Screw sizes from number two to number eighteen. U. S. Standard sizes from 3/16 to 1/2 inch. S. A. E. (A. L. A. M.) 1/4 to 5/8 in. Twenty-three sizes in all. Two Tap Wrenches and two Die Stocks.

Cutting 256, 348, 436, 632, 832, 1024, 1224, 1420, 1618, 1816 M. S. Sizes.
3/1624, 3/20, 5/1618, 5/16, 7/1614, 1/212 U. S. Standard.
1/428, 5/1624, 3/424, 7/1620, 1/220, 9/1618, 5/818, S. A. E. (A. L. A. M.) Standard.

LIST PRICE, \$42.00

Send for our Catalogue containing Ninety-six assortments of Screw-Plates.

AMERICAN TAP & DIE CO.

Greenfield, Mass.

BIG 4 BATTERY COMPANY

CALUMET & GOSTLIN STREETS

HAMMOND

INDIANA

Please mention The Automobile Trade Directory

STOCKS, Die (Continued)

Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning," "Green River," "Economy," "G T D." (See page 916.)
 Hart Mfg. Co., 2315-25 E. 20th St., Cleveland, O. "Duplex."
 Lightning—See Greenfield Tap & Die Corp.
 Little Giant—See Greenfield Tap & Die Corp.
 Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Reliable—See Conant & Donelson.
 Thistle—See Winter Bros. Co.
 Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

STOCKS, TRANSMISSION DRUM FOR FORDS—See Holders or Stocks, Transmission Drum

STOOLS, STEEL SHOP

Angle Steel Stool Co., Otsego, Mich. "Ot-steel."
 Kalamazoo Steel Goods Co., Kalamazoo, Mich. Manufacturing, Equipment & Engineering Co., Framingham, Mass.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Otsteel—See Angle Steel Stool Co.

STOPPERS, GLARE—See Dimmers, Glare

STOPS, Pedal for Fords

(To automatically stop the throw of the pedal at the neutral point)

Porter Products Corp., 670 Keith Bldg., Syracuse, N. Y. (See page 569.)

STOPS, Ratchet, for Fords

(Ratchet stop to be applied to brake drums to prevent car rolling backward on steep grades)

Wayland Specialty Mfg. Co., Wayland, N. Y.

STOPS, Steering Gear for Fords

(Device to prevent steering arm passing beyond center and locking when turning)

Stiles Mfg. Co., St. Louis, Mo. (See page 527.)

STORAGE BATTERIES—See Batteries, Storage

STORAGE BATTERY ACID—See Dynamos and Motor Generators, Battery Charging

STORAGE BATTERY BOXES—See Boxes, Storage Battery

STORAGE BATTERY CARRIERS—See Carriers, Storage Battery

STORAGE BATTERY CHARGERS—See Electrolyte, Storage Battery

STORAGE BATTERY CHARGING CLIPS
 See Clips, Electric Test; also Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING PLUGS
 —See Plugs, Charging

STORAGE BATTERY CONNECTOR DRILLS—See Drills and Bits, Battery Strap

STORAGE BATTERY CONNECTORS—See Connectors, Storage Battery

STORAGE BATTERY CONTROLLERS—See Controllers, Storage Battery

STORAGE BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

STORAGE BATTERY FILLERS—See Fillers, Storage Battery

STORAGE BATTERY HANDLES—See Handles, Storage Battery

STORAGE BATTERY HOLDING DOWN CLAMPS—See Clamps, Storage Battery Holding Down

STORAGE BATTERY JARS—See Jars, Storage Battery

STORAGE BATTERY OPENING GENERATORS—See Steamers, Storage Battery Opening

STORAGE BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

STORAGE BATTERY POST CUTTERS—See Tools, Storage Battery Repair

STORAGE BATTERY REPAIR PARTS—See Parts, Storage Battery Repair

STORAGE BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

STORAGE BATTERY SEPARATORS—See Separators, Storage Battery

STORAGE BATTERY STEAMERS—See Steamers, Storage Battery

STORAGE BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

STORAGE BATTERY THERMOSTATS—See Thermostats, Storage Battery

STORAGE BATTERY TONGS—See Tools, Storage Battery Repair

STORAGE BATTERY TURNTABLES—See Turntables, Storage Battery

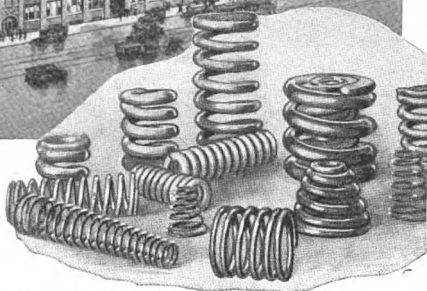
Everything is listed under the NOUN or principal word

GIBSON

SPRINGS



**COILED
TORSION-EXTENSION
COMPRESSION-SPECIAL FLAT
TYPE SPRINGS**



MADE FROM

**CRUCIBLE SPRING STEEL—ALLOY STEEL
OPEN HEARTH SPRING STEEL—MUSIC WIRE
PHOSPHOR BRONZE AND BRASS**

Write for "Free Book
on Springs"—Contains
Valuable Data for En-
gineering Dept.



WE have acquired a knowledge that can only be obtained from experience, and this accounts for the excellence, uniformity of temper, exactness of size and finish of our springs. Knowledge of material, improved machinery, experienced workmen and care in testing our work before delivery, are the prime reasons why our springs are used by the leading concerns throughout the country.

"MAKING SPRINGS NEARLY 50 YEARS"

**THE
WM. D. GIBSON COMPANY**

1802 Clybourn Ave.

CHICAGO

ILLINOIS

Please mention The Automobile Trade Directory

STORAGE BATTERY VISES—See Vises,
Storage Battery

STORAGE SYSTEMS—See Tanks and Sys-
tems, Gasoline Storage

STORAGE TANKS—See Tanks and Sys-
tems, Gasoline Storage

STOVE BOLTS—See Bolts, Stove

STOVES, Camp

- American Gas Machine Co., 810 Clark St.,
Albert Lea, Minn. "Kampkook."
Anton & Ackerman Co., 132-34 Kansas Ave.,
Topeka, Kans.
Auto Bed Camp Mfg. Co., 2207 Pennsylvania
St., Kansas City, Mo.
Auto Camp Stove Co., 1420 Cass St., Fort
Wayne, Ind.
Auto-Kamp Equipment Co., 2008 Sheridan
Ave., Saginaw, Mich. "Kamp Kook."
Baker-Lockwood Mfg. Co., 618 Delaware St.,
Kansas City, Mo.
Boyle Mfg. Co., Los Angeles, Cal.
Enterprise Mfg. Co., Bowery & Center Sts.,
Akron, O.
Handy—See National Stamping & Electric
Works.
Kamp Kook—See Auto-Kamp Equipment Co.
Kampkook—See American Gas Machine Co.
Kampkook—See Phoenix Tent & Awning Co.
Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis,
Mo.
Moats—See Prentiss-Wabers Stove Co.
National Stamping & Electric Works, 424 S.
Clinton St., Chicago, Ill. "Handy."
Phoenix Tent & Awning Co., First & Mon-
roe Sts., Phoenix, Ariz. "Kampkook."
Prentiss-Wabers Stove Co., 85 Spring St.,
Grand Rapids, Wis. "Moats."
Prest-O-Lite Co., 30 E. 42d St., New York,
N. Y.
Stanley Skid Chain Co., Boone, Iowa.
(See page 381.)
Umbrella Camp Stove Co., Mount Vernon,
Wash.

STRAIGHTENING BARS, AXLE—See Bars,
Axle Straightening

STRAIGHTENING MACHINES—See Ma-
chines, Leaf Spring Straightening

STRAIGHTENING PRESSES—See Presses,
Bench Straightening

STRAIGHTENING TOOLS—See Tools,
Fender Straightening

STRAINERS, CARBURETOR INTAKE—
See Cleaners, Air

STRAINERS or SEPARATORS, Gasoline

(For use between tank and carburetor to remove dirt
and water; for Strainer Funnels—See Funnels, or
Measures, Metal)

- Allen Wrench & Tool Co., Public & Eddy Sts.,
Providence, R. I.
American Brass & Iron Co., Detroit,
Mich. (See page 205.)
Anthony Co., 135 West Ave., Long Island
City, N. Y. (See page 755.)
Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Attwood Brass Works, Grand Rapids,
Mich. (See page 479.)
Automotive Mfg. Corp., Strauss Bldg.,
Chicago, Ill. "Wetherholt."
(See page 745.)

Automotive Material Co., Chicago, Ill.
"Automat-Co." (See page 919.)

Beneke & Kropf Mfg. Co., 2559 W. 21st
St., Chicago, Ill. "Rayfield."
(See page 193.)

Bousman Mfg. Co., 1157 Plainfield Ave. N. E.,
Grand Rapids, Mich. "Grand Rapids."

Breeze Mfg. Co., 255 South St., Newark, N. J.
Bush Mfg. Co., Hartford, Conn.
(See page 787.)

Colador Engineering Corp., 276 Jackson Ave.,
Long Island City, N. Y.

Columbia Gasoline Filter Co., 23 Kingston St.,
Boston, Mass.

Commonwealth Brass Corp., Detroit,
Mich. (See page 325.)

Davidson, F. J., 9688 Prairie Ave., Detroit,
Mich. "Phillips."

Eisenbrandt, F. B., Light St., Baltimore, Md.
"Practical."

Gas-Co-later—See Visible Gasoline Filter Co.
Grand Rapids—See Bousman Mfg. Co.

Hancock Mfg. Co., 802 E. Henry St., Charlotte,
Mich.

Holtzer-Cabot Electric Co., 125 Armory St.,
Boston, Mass.

Holtzer-Cabot Electric Co., 125 Armory St.,
Boston, Mass.

Imperial Brass Mfg. Co., 1234 W. Harri-
son St., Chicago, Ill. (See page 177.)

Juhasz Carburetor Co., 244 W. 49th St., New
York, N. Y.

Kleengas—See National Automotive Mfg. Co.
Lunkenheimer Co., Beekman & Waverly Sts.,
Cincinnati, O. "Trusty."

McRae & Roberts Co., 100-116 S. Campbell
Ave., Detroit, Mich.

Michigan Lubricator Co., Detroit, Mich.
(See page 263.)

Michigan Wire Cloth Co., 2100 Howard St.,
Detroit, Mich.

National Automotive Mfg. Co., 822 Cham-
plain Ave., Cleveland, O. "Kleengas."
(See page 611.)

National Gauge & Equipment Co., La
Crosse, Wis. (See page 425.)

National Separator & Machine Co., 89 State
St., Boston, Mass. "Springfield."

Parsons Mfg. Co., 5301-47 Bellevue Ave., De-
troit, Mich.

Powell Co., Wm., 2525 Spring Grove Ave., Cin-
cinnati, O.

Practical—See Eisenbrandt, F. B.
Rayfield—See Beneke & Kropf Mfg. Co.

Ro-Gas-Filter—See Roll Mfg. Co.

Roberts Brass Mfg. Co., 5401 W. Fort St.,
Detroit, Mich.

Roll Mfg. Co., Macy St., Fond du Lac, Wis.
"Ro-Gas-Filter." (See page 919.)

Sage Bros., 780 Union St., Brooklyn, N. Y.
"Sasco." (See page 919.)

Sasco—See Sage Bros.
Springfield—See National Separator & Ma-
chine Co.

Sterling & Skinner Mfg. Co., 2672 E. Grand
Blvd., Detroit, Mich.

Storm Mfg. Co., Dept. L., Minneapolis,
Minn. (See page 623.)

Stromberg Motor Devices Co., Dept. 1020,
64 E. 25th St., Chicago, Ill.
(See page 915.)

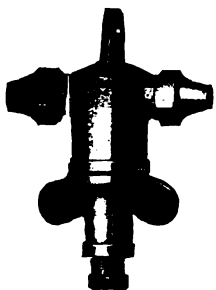
Trusty—See Lunkenheimer Co.
Visible Gasoline Filter Co., 1426 Wabash
Ave., Chicago, Ill. "Gas-co-later."
(See page 919.)

Western Brass Mfg. Works, Marshall
Blvd. & 21st St., Chicago, Ill.
(See page 263.)

Wetherholt—See Automotive Mfg. Corp.
Wheeler-Schebler Carburetor Co., In-
dianapolis, Ind. (See page 197.)

Zimmerman Mfg. Co., B. F., 257 George St.,
New Haven, Conn.

Everything is listed under the NOUN or principal word



Motor Saco Strainer

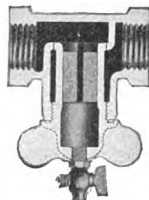
Keeps Dirt and Water Out of the Carburetor
We manufacture STRAINERS Exclusively.
From the small Gasoline Motor to the large
Ocean Liner, both Single or Duplex. For
any kind of Liquid,

Our Catalogue Shows a Very Complete Line

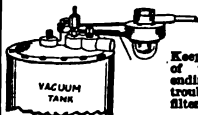
SAGE BROTHERS, Inc.

780 Union Street - Brooklyn, N. Y., U. S. A.

Largest Exclusive Manufacturers of
STRAINERS in the United States



Here Are Four FAST SELLING Accessories



**Automot-Co.
Steward Visible
Gas Filter**

Keeps all dirt and water out
of the vacuum tank—thus
ending 98% of all carburetor
troubles. Any one can attach
filter in a few minutes.

Retails for \$5.50.



Automot-Co. B. & M. Engine Lock

is a real protection against
theft. It shuts off the fuel
supply. Not another key in
ten thousand will operate it.
Easy to install.

Retails for \$5.00.



Automot-Co. Transformer

for All Cars
Multiplies a thin, weak spark into
large, blue white blaze of great limit-
ing power.

Will instantly fire a bad plug gone
dead because of cracked porcelain or
fouled with carbon and oil.
Keeps the points clean and in perfect
condition.

Means more power and greater econ-
omy because all gas is burned.
Price \$1.00.



**AUTOMOT-CO GAS-
KET VAPORIZER**

This vaporizer breaks up the
gas as it enters the engine
into a very fine mist. This
insures instant ignition. Just
the thing for cold weather.
Can be attached in a few
minutes. Sells for \$1.00.

**AUTOMOTIVE MATERIAL CO.
CHICAGO, ILL.**

GAS-CO-LATOR

[VISIBLE GASOLINE FILTER]

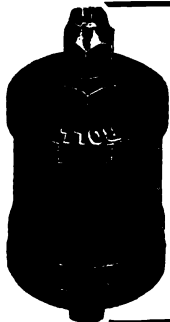
*A positive automatic
chamois filter*

Eliminates carburetor trou-
ble. Pays for itself. A ne-
cessity today because the gas
you are buying contains just
the foreign substance that
creates trouble, aggravation
and expense and automobile
accessory.

Visible Gasoline Filter Co.

1426 S. Wabash Ave.

Chicago



MORE MILEAGE—MORE POWER

By Using

RO-GAS-FILTER

The Ro-Gas-Filter is a device of brass and glass, easily at-
tached on the feed line of any car or truck. The Ro-Gas-
Filter will remove all water and other impurities from any
gas. Now in use on many cars. Popular Low Price.

Its use increases the power and lowers operating cost.
Attractive dealer proposition and descriptive matter on request.

THE ROLL MANUFACTURING COMPANY

Macy Street, Fond du Lac, Wisconsin

Please mention The Automobile Trade Directory

STRAINERS or SEPARATORS, Motorcycle Gasoline

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 871.)

STRAINERS, Radiator and Tank Filler

(Strainer baskets of woven wire for use in fuel and oil tanks and radiators)

Industrial Electric Mfg. Co., Wayne, Mich.

Multi-Metal Co., 251 W. 19th St., New York, N. Y.

STRAINERS, TANK—See Strainers, Radiator and Tank

STRAP BUCKLES—See Buckles, Strap

STRAP LOOPS—See Loops, Brass Snap

STRAP SNAPS—See Hooks, Snap

STRAPS, Anti-Rattling Hood

(Leather or web straps with spiral spring to put over engine hoods to prevent their rattling)

Bantlin Co., Julius J., Cincinnati, O.

Campbell—See Perkins Campbell Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Rochester Woven Belting Co., Commercial St., East Rochester, N. Y. "Tuftex."

Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)

Tuftex—See Rochester Woven Belting Co.

STRAPS, HOOD—See Straps, Anti-Rattling Hood; also Straps, Leather

STRAPS, Leather

Almco—See Auto Leather Mfg. Co.

Auto Leather Mfg. Co., Arlington, N. J. "Almco," "Kaenjay." (See page 119.)

Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 313.)

Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Bantlin Co., Julius J., Cincinnati, O.

Bemco—See B. E. Mfg. Co.

Bond Co., Charles, 530 Arch St., Philadelphia, Pa. "Fabrutex."

Boston Leather Specialties, 30 Merrimack St., Boston, Mass.

Bunge Co., Otto, 1052 Dawson St., Indianapolis, Ind.

Campbell—See Perkins, Campbell Co.

Carter Co., George R., Connerville, Ind.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Decker, J. C., Montgomery, Pa.

Deford Co., 729 Atlantic Ave., Boston, Mass.

Desoco—See Detroit Socket Co.

Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind.

(See page 901.)

Economy Stay Co., Jefferson City, Mo.

Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 115.)

Fabrutex—See Bond Co.

Feesser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

Fitwell—See Bailey-Fitwell Co.

G. & K.—See Graton & Knight Mfg. Co.

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

(See page 119.)

Hildrick, Thomas H., 144 Chambers St., New York, N. Y.

Hoffeld & Co., R., 61-69 Carroll St., Buffalo, N. Y.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)

Hutchinson Bros. Cut Leather Co., 1926 W. Eighth St., Cincinnati, O.

Jewell Belting Co., 15 Trumbull St., Hartford, Conn.

Kaenjay—See Auto Leather Mfg. Co.

Kelley, A. F., 178 S. Main St., Providence, R. I.

Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.

Kronauer & Co., Chas., 152 N. Desplaines St., Chicago, Ill.

Leather Parts Co., Gest & Evans Sts., Indianapolis, Ind.

Leather Products Co., 715 Carr St., Cincinnati, O.

Lefkowitz & Bro., L., 1 Greene St., New York, N. Y.

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Mooney Belting Co., 844 W. Sixth St., Cincinnati, O.

Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)

National Leather Co., 161 South St., Boston, Mass.

Neldhardt & Co., C., 31 N. Water St., Rochester, N. Y.

Page Belting Co., Concord, N. H.

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 115.)

Powers Mfg. Co., Waterloo, Ia. (See page 881.)

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

(See pages 125, 143, 307 and 983.)

Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)

Sage's Trunk & Leather Goods Co., 10 Washington St., N., Boston, Mass.

Specialty Harness Co., Dayton, Va.

Everything is listed under the NOUN or principal word

STRAP, Leather (Continued)

- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.
 Strecker Bros. Co., 117-19 Putnam St., Marietta, O.
 Superior—See Fesser Co.
 Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers) (See page 377.)
 Wakefield Sales Co., Trempealeau, Wis.
 Waco—See Williamsport Leather Goods Co.
 Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Waco."
 Wing Co., Charles, Amesbury, Mass. (See page 873.)
 Winship, W. W., 71 Summer St., Boston, Mass.

STRAPS, Rebound

(See also Shock Absorbers; also Springs, Supplementary)

- Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Buckeye—See Central Brass & Fixture Co.
 Bunge Co., Otto, 1062 Dawson St., Indianapolis, Ind.
 Carter Co., George R., Connerville, Ind.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 115.)
 Fesser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."
 G. & K.—See Graton & Knight Mfg. Co.
 Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)
 Graton & Knight Mfg. Co., Worcester, Mass. "G & K."
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Meslinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.
 Perkins-Campbell Co., Cincinnati, O. (See page 115.)
 Rochester Woven Belting Co., Commercial St., East Rochester, N. Y. "Tuftex."
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 761.)
 Smith Belting Co., Manning J., 89 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 309.)
 Superior—See Fesser Co.
 Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)
 Tuftex—See Rochester Woven Belting Co.

STRAPS, Rebound, for Fords

(See also Shock Absorbers; also Springs, Supplementary)

- Bantlin Co., Julius J., Cincinnati, O.
 Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Straps.) (See page 115.)
 G. & K.—See Graton & Knight Mfg. Co.

- Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."
 Meslinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 85.)
 Perkins-Campbell Co., Cincinnati, O. (See page 115.)
 Rochester Woven Belting Co., Commercial St., East Rochester, N. Y. "Tuftex."
 Tuftex—See Rochester Woven Belting Co.

STRAPS, STARTING CRANK—See Holders, Starting Crank**STRAPS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair****STRAPS, TIRE—See Straps, Leather; also Straps, Web****STRAPS, TOP—See Straps, Leather; also Straps, Web****STRAPS, Web**

- American Mills Co., of N. Y., 438 Broadway, New York, N. Y.
 Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.
 Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1049.)
 Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco," "Ustus."
 Deco—See Dafoe-Eustice Co.
 Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.
 Hinson—See Powers Mfg. Co.
 Manufacturing & Sales Corp., 40 Cedar St., New York, N. Y.
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 581.)
 Rochester Woven Belting Co., Commercial St., East Rochester, N. Y. "Tuftex."
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 508 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)
 Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)
 Tuftex—See Rochester Woven Belting Co.
 Ustus—See Dafoe-Eustice Co.

STREAMLINING, Airplane Rubber Wire

- Dural Rubber Corp., Maple Ave., Flemington, N. J.
 Goodyear Tire & Rubber Co., Akron, O. (See page 963.)

STRIP STEEL—See Steel, Cold Rolled Strip; also Steel, Hot Rolled Strip**STRIPS, Spring Leaf Lubricating**

(Composition lubricating strips to place between spring leaves to prevent squeaking; for Spring Leaf Oilers—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating)

- Avery—See Northwestern Chemical Co.
 Avery Portable Lighting Co., 351 National Ave., Milwaukee, Wis.

Everything is listed under the NOUN or principal word

STRIPS, Spring Leaf Lubricating
(Continued)

Center-Fed Spring Insert Co., 404 Park Ave., Williamsport, Pa.
 Cleveland Graphite-Bronze Co., Cleveland, O. (See page 381.)
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 229.)
 Merrill-Hamilton Co., S. W. Blvd. & Central St., Kansas City, Mo. "Springlife."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norweseco," "Avery." (See page 277.)
 Norweseco—See Northwestern Chemical Co.
 Spiller Co., H. A., 55 Elm St., Boston, Mass. "Springese."
 Springese—See Spiller Co.
 Springlife—See Merrill-Hamilton Co.
 Wonder Worker—See Hall-Thompson Co.

STRIPS, Wind Shield Weather

Akron Auto Garage Co., 26 E. Buchtell St., Akron, O.
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Boston Woven Hose & Rubber Co., Cambridge, Mass.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 Doerner & Co., 4127 32d St., Cincinnati, O. "Paragon."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Everware Rubber Co., 421 Oregon St., Milwaukee, Wis.
 Hopewell Bros., Watertown, Mass. (See page 641.)
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 McCormick-Allmand—See Robinson Mfg. Co.
 Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 843.)
 Paragon—See Doerner & Co.
 Robinson Mfg. Co., Fourth & Jefferson Sts., Louisville, Ky. "McCormick-Allmand."
 Sterling Top & Equipment Co., 518-23 W. 57th St., New York, N. Y.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y. "2-Way."
 2-Way—See Trico Products Corp.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 Vitalic—See Continental Rubber Works.

STRIPS, WOOD MOLDING—See Parts, Wood Automobile

STRIPS, WOOD TACKING—See Parts, Wood Automobile

STRUT ENDS, AIRPLANE—See Ends, Airplane Strut

STRUT FORMING MACHINES—See Lathes, Airplane Strut

STRUT LATHES, AIRPLANE—See Lathes, Airplane Strut.

STRUTS, AIRPLANE—See Parts, Wood

STRUTS, STEERING GEAR—See Checks, Steering Gear

STUD BOLT EXTRACTORS—See Extractors, Stud Bolt

STUFFING BOXES, MOTOR BOAT—See Boxes, Motor Boat Staffing

SUIT CASE HOLDERS—See Holders, Suit Case or Luggage

SUN SHIELDS—See Visors, Wind Shield

SUPPLEMENTARY RIMS—See Rims, Supplementary

SUPPLEMENTARY SEATS—See Seats, Supplementary

SUPPLEMENTARY SPRINGS—See Springs, Supplementary

SUPPLIES, Dealers and Jobbers in

(Comprising only Dealers and Jobbers in Automobile Supplies who advertise in this publication)

Associated Automobile Accessories Co., 122 W. 43d St., New York, N. Y. (See page 723.)
 Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. (See page 137.)
 Automobile Supply Co., 1601-03 Michigan Blvd., Chicago, Ill. (See page 481.)
 Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 701.)
 Beck & Corbitt, First, Ashley & O'Fallon Sts., St. Louis, Mo. (See page 637.)
 Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. (See page 273.)
 Electric Appliance Co., Chicago, Ill. (See page 35.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Martin, Jas., 130-34 W. 52d St., New York, N. Y. (See page 637.)
 Motor Electrical Equipment Co., 1251 S. Michigan Ave., Chicago, Ill. (See page 683.)
 Pruden Hardware Co., W. E., 864-66 Eighth Ave., New York, N. Y. (See page 335.)
 Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 279.)
 Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 701.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (See pages 685 to 692.)

SUPPLIES, Foundry

Brass Founders Supply Co., 357 Wilson Ave., Newark, N. J.
 Coleman Foundry Equipment Co., 2102-13 Abbey Ave., Cleveland, O.
 Hill & Griffith Co., C. H. & D. Ry. & Genl. St., Cincinnati, O.
 Obermayer Co., S., 447 Ebans St., Cincinnati, O.
 Stevens, Frederick B., Third & Larned Sts., Detroit, Mich.
 Woodson Co., E. J., 7415 St. Aubin St., Detroit, Mich.

Everything is listed under the NOUN or principal word



No. 278
5 Gallon
Gasoline
Pump



No. 227
Portable
Oil Tank

World's Finest Garage Will Use Wayne Equipment

Cleveland's Creswell Garage, conceded to be the finest garage in the world, has just been completed.

Of signal importance among its features is the equipment for storing and dispensing gasoline and oils. Naturally, Wayne Equipment has been chosen—for nothing short of Wayne's incomparable service would be in keeping with such a garage.

There is no speculation concerning the wisdom of the selection. Wayne Equipment has proven itself to be more economical, honest and dependable, to be quicker and cleaner, in the Loop Garage, Chicago, the Fifth Avenue Coach Company Garage, New York, as well as in large and small garages the country over.

Such sure evidence of Wayne superiority is an unerring buying guide for you. Descriptive bulletins, 276 AD, 320 AD, and 11 AD will be gladly supplied upon request.

WAYNE OIL TANK AND PUMP COMPANY

703 Canal Street

Ft. Wayne, Ind.

A national organization with offices in thirty-four American cities—repair stocks and expert service at your command—representatives everywhere



HONEST MEASURE PUMPS

Gasoline and Oil
Storage Systems

Heavy Metal
Storage Tanks

Oil Filtration
Systems

Oil Burning
Systems

Furnaces for Metal Melting
Forging and Heat Treating



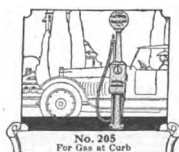
No. 320
For Oil at Curb



No. 230
For Gas and Oil



No. 65
For Lubricating Oils



No. 205
For Gas at Curb

Please mention The Automobile Trade Directory

SUPPLY JOBBERS—See Jobbers, Supply

SUPPORTS, Brake Rods, for Fords

(To prevent rattling of brake rods)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Benford Auto Products, Inc., Mt. Vernon, N. Y. (See page 945.)

Edelmann & Co., E. 2638 N. Crawford Ave., Chicago, Ill.

Hill, H. E., Galesburg, Mich.

Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

Metal Stamping Co., 12th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

SUPPORTS, CAR—See Jacks, Tire Saving

SUPPORTS, CRANK CASE REPAIR, FOR FORDS—See Brackets or Supports, Engine Repair

SUPPORTS, ENGINE REPAIR FOR FORDS—See Brackets or Supports, Engine Repair

SUPPORTS or ARCH BARS, Hood

(Formed metal bar or ledge to fasten to dash board to carry rear end of engine hood)

Crosby Co., Buffalo, N. Y. (See page 893.)

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y. (See page 835.)

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Moline Pressed Steel Co., Fifth St., East Moline, Ill.

SUPPORTS, RADIATOR, FOR FORDS—See Cradles, Radiator

SUPPORTS, RADIUS RODS FOR FORDS—See Rods, Radius

SUPPORTS, RUNNING BOARD FOR FORDS—See Braces, Running Board

SUPPORTS, Truck Body

(Supports or brackets for attaching body to frame)

C. M. & D.—See Chicago Mfg. & Distributing Co.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Mayer Wagon Co., 6461 Frankstown Ave., E. E. Pittsburgh, Pa.

SURFACE GAGES—See Gages, Surface

SURFACE GRINDERS—See Grinders, Surface

SWEDGING PRESSES—See Presses, Bushing Swedging

SWING FRAME GRINDERS—See Grinders, Swing Frame

SWITCH CONTROLS FOR FORDS—See Controls, Ignition Switch

SWITCH KEYS FOR FORDS—See Keys, Switch

SWITCH LOCKS FOR FORDS—See Locks, Switch and Coil

SWITCHES, ELECTRIC LOCK—See Switches, Lock

SWITCHES, ELECTRIC LOCK, FOR FORDS—See Locks, Switch and Coil

SWITCHES, Horn

(Special horn switch for attaching to steering column below the wheel and devised so it can be operated without removing the hands from the wheel.)

Seng Auto Device Co., 1452 Dayton St., Chicago, Ill. (See page 1037.)

SWITCHES, Ignition

(See also Switches, Steering wheel)

Atwater Kent Mfg. Co., 4927 Stenton Ave., Philadelphia, Pa.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."

Brock Rubber Co., A. S., 100 Purchase St., Boston, Mass.

C-D—See Caskey-Dupree Mfg. Co.

Caskey-Dupree Mfg. Co., Marietta, O. "C-D."

Chicago Electric Mfg. Co., 2217 S. Halsted St., Chicago, Ill. "Handy."

Clum Mfg. Co., 22-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Couch Co., S. H., 170 Purchase St., Boston, Mass. "Puritan."

Fahnestock Electric Co., East Ave. & Eighth St., Long Island City, N. Y.

Handy—See Chicago Electric Mfg. Co.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 79.)

Puritan—See Couch Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

(See page 313.)

Spiltdorf Electrical Co., 98 Warren St., Newark, N. J.

SWITCHES, KICK—See Switches, Ignition

SWITCHES, Light

(For turning on and off electric lights on car)

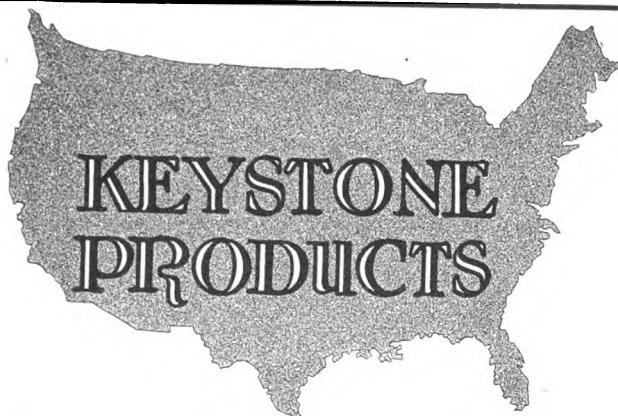
Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Ameco." (See page 557.)

Amco—See Aid Mfg. Co.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."

Everything is listed under the NOUN or principal word



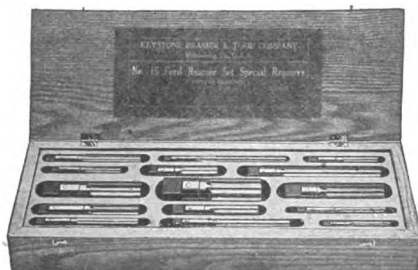
"Known from Coast to Coast"

KEYSTONE REAMERS & MILLING CUTTERS FOR AUTOMOBILES



**Keystone Expansion Reamers
Especially Designed for
Ford Cars.**

Expansion Reamers have the advantage over solid Reamers of being adjustable as to size. They are finished very close to size and can be adjusted from about .006 to .015 of an inch larger. They should be set to the correct size before using.



FORD SET No. 15

**Thirteen Reamers covering
20 Bushings, taking care of
every bushing that needs
replacement.**

We also manufacture Cylinder Reamers for Fords; Die and Screw Plate Sets; Hand Reamers in all sizes for all uses. Taper Pin Reamers. Write for complete catalog and prices.

Reamers in Set No. 15

2713-14-P	(with Pilot) Spindle	2599X	Hub Cam Shaft
3521	Steering Gear Shaft	3042	
3309	Transmission Slow Speed	3043	Cam Shaft Front, Center and
3620		3044	Rear Bearing and Steering
3844	Front and Rear Spring Perch	3545	Post Bracket Bushings
3053-B	Valve Stem, Oversize	30224-P	Piston Pin (with Pilot)
3058-B	Push Rod, Oversize	33145	Transmission Triple Gear
3320-B-C	Transmission Driven Sleeve	3304	Transmission Reverse Gear
3311		1076	Universal Joint Ford Truck
3327-B	Transmission Driving Plate		

Manufactured by

KEYSTONE REAMER & TOOL COMPANY

MILLERSBURG, PENNSYLVANIA

Chicago Office, 189 N. Market St.

Los Angeles Office, Higgins Bldg., Cor. Second and Main

New York Office, 38 Warren St.

Please mention The Automobile Trade Directory

Westinghouse

STARTING, LIGHTING & IGNITION EQUIPMENT

Main and Branch Offices

Automotive Equipment Department

General Sales and Service Offices, 82 Worthington St., Springfield, Mass.

Cleveland, Ohio
1900 Euclid Ave.

Detroit, Michigan
1109 Kresge Bldg.

Chicago, Illinois
Conway Bldg.

Indianapolis, Ind.
1103 City Trust Bldg.

Service Stations

ALABAMA

Birmingham—Birmingham Electric
Battery Co., 2018 Ave. B.
Mobile—Mobile Electric Garage,
204 North Royal Street.
Montgomery—Mint&Kratz, 3 Bell St.

ARIZONA

Globe—Elec. Equip. Co. of Arizona.
Mesa—Elec. Equip. Co. of Arizona.
Nogales—Elec. Equip. Co. of Arizona.
Phoenix—Elec. Equip. Co. of Arizona,
326 Washington Street.
Tucson—Elec. Equip. Co. of Arizona.

ARKANSAS

Ft. Smith—Electric Service Co., 917
No. A Street.
Hot Springs—Brown Electric Co.
Little Rock—Arkansas Battery Co.,
Inc., 414 Center Street.

CALIFORNIA

Bakersfield—Mongerson Elec. Machine
Works, 2328 Chester Avenue.
El Centro—Electrical Service Co.,
615 State Street.
Exeter—Central Calif. Electric Co.,
Pine Street between D & E.
Fresno—Electric Laboratories, Inc.,
1347 Van Ness Street.
Lindsay—Central Calif. Electric Co.
Long Beach—Automotive Electric
Co., 227 East Broadway.
Los Angeles—Electric Equipment Co.,
1240 South Hope Street.
Oakland—Auto Electric Service Co.,
21st & Webster Streets.
Pasadena—Pasadena Battery & Igni-
tion Co., 754 East Colorado Street.
Riverside—Haymond & Sands, 803
West 8th Street.
Sacramento—Sacramento Motor Serv-
ice, 815 L Street.
San Diego—Auto Electric Equipment
Co., 839 8th Street.
San Francisco—Automotive Service
Agency, Van Ness & O'Farrell Sts.
San Jose—Auto Electric Service Co.,
471 South 1st Street.
Santa Ana—McClary Ignition Works,
406 Birch Street.
Santa Barbara—Auto Electric Service,
232 State Street.
Stockton—Wilson-Shultz & Co.,
Miner Avenue & San Joaquin Sts.
Tulare—Central Calif. Electric Co.,
232 South K Street.
Visalia—Central Calif. Electric Co.,
116 South Locust Street.

COLORADO

Colorado Springs—Cascade Auto Co.,
115 North Cascade Avenue.
Denver—Electric & Service Eng. Co.,
1313-1315 Broadway.
Ft. Morgan—Williams Battery Serv-
ice, 401 Main Street.
Greely—Exide Electric Service Sta.,
1015 8th Avenue.

CONNECTICUT

Bridgeport—Kraus & D'Elia Electric
Co., 171-179 Cannon Street.
Hartford—Electric Parts & Service
Co., 112 Arts & Crafts Street.
New Haven—New Haven Electric
Co., 296 Elm Street.
Stamford—Stamford Electric Con-
tractor, Inc., 221 Atlantic Street.
Waterbury—Auto Electric Co., 451
Meadow Street.

DELAWARE

Wilmington—Wilmington Storage
Battery, 830 Tatnall Street.

DISTRICT OF COLUMBIA

Washington—Miller-Dudley Co.,
1716 14th Street, N. W.

FLORIDA

Jacksonville—The Magneto Ex-
change, 223 West Adams Street.
Miami—Electrical Equipment Co.,
312 13th Street.
Tampa—The Electric Service Co.,
Inc., 901-903 Florida Avenue.

GEORGIA

Atlanta—Paul D. O'Kelley Co., 78
Auburn Avenue.
Augusta—Lunday Elec. Service Co.,
507 Broad Street.
Columbus—Columbus Battery &
Welding Co., 1416 First Avenue.
Macon—Wade & Co., 566 Second St.

IDAHO

Boise—Oakley & Sons, 11th and
Idaho Streets.
Idaho Falls—B. B. Light Co., 210 C St.
Pocatello—Edwards-Warden Motor
Parts Co., 541 East Center Street.

ILLINOIS

Bloomington—Heery & Moore, 519
N. Prairie Street.
Champaign—Paul J. Strable Co.,
342 N. Hickory Street.
Chicago—Arthur Jones Electric Co.,
2925 Calumet Avenue.
Decatur—Electric Service Co., 345 E.
William Street.
Galesburg—Hoben & Marry, 136 S.
Prairie Street.
Lincoln—United Battery & Electric
Co., 614 Broadway.
Peoria—Electrical Testing Co., 300
Knockville Avenue.
Rockford—Rockford Battery & Elec-
tric Co., 313 Market Street.
Springfield—Chapin Electric Garage,
407 E. Jackson Street.

INDIANA

Anderson—Fulwider-Grimes Battery
Co., 130 East 9th Street.
Elkhart—Auto Specialties Co., 221
Harrison Avenue.
Evansville—Automobile Electric
Corp., 312-314 Water Street.
Ft. Wayne—Auto Electric Service
Co., 213 West Main Street.

Indianapolis—Automotive Parts &
Elec. Service Corp., 721 North
Illinois Street.
Richmond—Chenoweth Electric Serv-
ice Co., 1113 Main Street.

IOWA

Burlington—Paul Jones Electric Co.,
209 Division Street.
Cedar Rapids—Monroe Battery Co.,
2nd and 4th Avenue.
Davenport—Johnson Motor Service
Co., Front and Brady Streets.
Des Moines—Claiborne-Reno Co.,
1023 Locust Street.
Ft. Dodge—The Auto Electric Serv-
ice Co., 610 1st Avenue South.
Grinnell—Bridwell Electric Co.
Jefferson—W. H. Hamilton, 100 W.
Chestnut Street.
Ottumwa—Friday Batt. & Elec. Corp.
Sigourney—Friday Batt. & Elec. Corp.
Sioux City—Arthur Electric Service
Co., 715 Pearl Street.
Waterloo—Central Battery & Elec-
tric Co., 318 East Fifth Street.

KANSAS

Arkansas City—Mears Brothers, 407
S. Summit Street.
Atchison—C. C. Gerber, 112 North
7th Street.
Clay Center—Miller Co., 4th &
Lincoln Streets.
Holton—Holton Battery & Starter
Service.
Manhattan—Keele The Battery Man.
Salina—The Spray Electric Co., 215
Topeka—Keele Electric Co., 215
West 6th Street.
Wichita—E. S. Cowle Electric Co.,
317-319 South Market.

KENTUCKY

Louisville—Rommel-Smith Motor
Co., 901 East Broadway.

LOUISIANA

New Orleans—Subren, Inc., 1050
Carondelet Street.
Shreveport—The Southern Battery
Co., 900 Texas Avenue.

MAINE

Augusta—Weber's Auto Electric Serv-
ice, 10 Dickman Street.
Bangor—Arvid L. Ebesson, 225
Main Street.
Portland—L. W. Cleveland, 441-443
Congress Street.

MARYLAND

Baltimore—Automotive Engineering
Co., 1727 North Charles Street.
Cumberland—Treiber Electric Service
Co., 148-150 No. Mechanic Street.

MASSACHUSETTS

Boston—Jackson Electric Co., Inc.,
711 Beacon Street.
New Bedford—Auto Electric Serv-
ice, Station, 25 High Street.
Springfield—Krohn's Electric Station,
61 Pecousic Street.
Worcester—Jenkins & Robinson, 69-
75 Central Street.

MICHIGAN

Detroit—Auto Electric & Service
Corp., 41-109 Selden Avenue.
Flint—Storage Battery & Electric
Co., 118-120 East Union Street.
Grand Rapids—Leon S. Heth Co.,
236 Ottawa Street.
Kalamazoo—Kalamazoo Storage Bat-
tery Co., 420 Main Street.



Please mention The Automobile Trade Directory

Westinghouse

STARTING, LIGHTING & IGNITION EQUIPMENT

MINNESOTA

Duluth—United Electric Service Co., 747 East Superior Street.
 Minneapolis—Electric Magneto Co., 131 South 10th Street.

MISSISSIPPI

Jackson—Noel Repair Shop, 119 South Faust Street.

MISSOURI

Joplin—Sorber-Kuhn Auto Supply Co., 5th and Wall Streets.
 Kansas City—E. S. Cowie Electric Co., 1816 McGee Street.
 Springfield—Sebrree Battery & Electric Co., 451 St. Louis Street.
 St. Joseph—Utz Electrical Shop, 12th & Farnum Street.
 St. Louis—Automotive Electrical Service Co., Inc., 2129-31 Locust Street.

MONTANA

Billings—The Electric Service Station, 14 N. 30th Street.
 Butte—Butte Battery Co., 207 So. Montana Street.
 Helena—Wm. E. Chase Co., 11 Placer Avenue.
 Lewistown—Electric Service Station, 110 4th Avenue.

NEBRASKA

Hastings—United Electric Service Co., 817 West 3rd Street.
 Lincoln—Randall & Noll, 317 South 11th Street.
 Omaha—Auto Electric Service Co., 2205 Farnum Street.

NEW JERSEY

Elizabeth—Magneto & General Repair Station, 1152 Elizabeth Avenue.
 Newark—Batter-Oppenheim, Inc., 243 Central Avenue.
 New Brunswick—R. C. Bergen Co., Inc., 29 Albany Street.
 Paterson—Magneto & Starter Repair Co., 223 Van Houten Street.
 Trenton—J. Harry Hearn, 105 S. Warren Street.

NEW HAMPSHIRE

Manchester—Ernest E. Austin, 123 Canal Street.

NEW YORK

Albany—Autoelectric Equipment Repair Co., 61 Central Avenue.
 Binghamton—Elliott Engineering Co., 239 Water Street.
 Middletown—Electric Auto Systems Service, Inc., 11 Centor Street.
 Brooklyn—P. J. Durham, 761 Park Place.
 Buffalo—Meinhard Auto Supply Corp., 846 Main Street.
 Jamestown—Lindquist Electric Co., 208 Washington Street.
 New York—P. J. Durham Co., 244 West 49th Street.
 Poughkeepsie—Pease Electric Service Co., 27 New Market Street.
 Rochester—J. Lawrence Hill Co., 21-29 Plymouth Street.
 Syracuse—Burr Fowler Co., 145 Seymour Street.
 Troy—H. W. Boudry, 2817 6th Ave.
 Utica—Stetwater Electric Co., Inc., 322 Lafayette Street.
 Watertown—Watertown Battery & Elec. Co., 1313 State Street.

NORTH CAROLINA

Asheville—Asheville Battery Co., College and Market Streets.
 Charlotte—Garrett's Service Station, 327 East Trade Street.
 Lumberton—Battery Service Co.
 Winston-Salem—Jarvis Storage Battery Co., 229 So. Liberty Street.
 Wilmington—W. M. McIntire, 5 Dock Street.

NORTH DAKOTA

Fargo—Fargo Plumbing & Heating Co., 123 Broadway.
 Bismarck—Otto Dirlam, 218 Main St.

OHIO

Akron—A. M. Allen Electric Co., 210 Water Street.
 Canton—Mooch Electric Supply Co., Cleveland and 5th Avenue.

Cincinnati—The Boyle Engineering Co., 2023 Reading Road.
 Cleveland—The Bissinger Co., 2344 Euclid Avenue.
 Columbus—The Bissinger Co., 118 East Spring Street.
 Dayton—Herbert F. Apple, 427 East Third Street.
 East Liverpool—Seedley Battery Co., 414 East 6th Street.
 Lima—Beckman Electric Co., 124 South Central Avenue.
 New Philadelphia—Wes End Garage, 726 West Fair Street.
 Springfield—National Electric Co., 924 West Main Street.
 Tiffin—Fleck's Electric Service Station, 89 Jefferson Street.
 Toledo—Electric Power Maintenance Co., 11th and Monroe Streets.
 Youngstown—Auto & Ignition Co., 28 Pyatt Street.
 Zanesville—Weller Battery Ignition, 524 Main Street.

OKLAHOMA

Muskogee—Wood-Brison Battery Co., 440 West 1st Street.
 Oklahoma City—Johnson Electric Co., 718 North Broadway.
 Tulsa—Walsh Electric Co., 919 South Main Street.

OREGON

Pendleton—William E. Chas. Co., 320 East Court Street.
 Portland—Setric Electric Co., 9th and Glisan Streets.

PENNSYLVANIA

Allentown—Electric Equipment & Service Co., 727 Linden Avenue.
 Altoona—J. C. Mullen Motor Co., 1001 18th Street.
 Erie—Electric Battery & Const. Co., 206 West 12th Street.
 Harrisburg—Auto Electric Service Co., 17th & Kelly Streets.
 Johnstown—Smith's Fireproof Garage, 208-210 Main Street.
 Lancaster—Electric Equipment Co., 44 North Prince Street.
 Philadelphia—Auto Equipment Service Co., 1421 North Broad Street.
 Pittsburgh—Penn Storage Battery Co., 5750 Baum Blvd.
 Pottsville—Jones Electrical Service Station, 225 West Liberty St.
 Reading—Berks Auto & Ignition Co., 514 Cherry Street.
 Scranton—Scranton Auto Ignition Co., 317 Adams Avenue.
 Sharon—Sharon Auto Electric Service, 43 Pine Street.
 Uniontown—Reed Automotive Service, 97 West Main Street.
 Warren—The Post Office Garage, Market & Penn Streets.
 Wilkes-Barre—Kuse Electric Co., 54 N. Main Street.
 Williamsport—Harer & Wurster, Cor. 3rd and Hepburn Streets.

RHODE ISLAND

Providence—Magneto Parts Co., of R. I. 101 Fountain Street.

SOUTH CAROLINA

Charleston—The Gas Engine & Electric Co., 280 Meeting Street.
 Columbia—Auto Electric Co., Inc., 1216 Hampton Avenue.
 Greenville—Battery & Elec. Co., Inc., 514 S. Main Street.

Greenwood—Auto Electric Co., Map.

SOUTH DAKOTA

Aberdeen—Detwiler Auto Electric Service Co., 112 Third Avenue, S. W.
 Sioux Falls—Auto Electric Service, Inc., 206 No. Dakota Ave.
 Watertown—Hansen Auto Electric Co., 27 Third Street.

TENNESSEE

Chattanooga—McKenney Auto Elec. Co., 502 Broad Street.
 Nashville—Automobile Electric Service Co., 1315 Broadway.
 Knoxville—McNutt & Co., 317 W. Cumberland Ave.
 Memphis—Southern Electric Service Co., 927 Union Ave.

TEXAS

Arlene—Carter's Auto Elec. Service, 5th and Pine Streets.
 Dallas—Otto A. Hill Co., 1711 Young Street.
 El Paso—Western Battery & Magneto Co., Missouri & Kansas Streets.
 Ft. Worth—Starter Service Co., 38 Jennings Avenue.
 Houston—Tel Electric Co., 602 Preston Avenue.
 Plainview—Conner-Mathes Co., 613 Austin Street.
 San Angelo—Ragsdale Auto Supply Co., 8-10 Concho Street.
 San Antonio—S. X. Callahan, North Flores Street.
 Waco—Beard & Stone Elec. Co., 116 South Ninth Street.
 Wichita Falls—Electric Service Station, 1100 Scott Avenue.

UTAH

Salt Lake City—Intermountain Electric Co., 43-59 East 4th Street.

VIRGINIA

Norfolk—Reliance Electric Co., 522 Harrington Avenue.
 Richmond—W. M. Reynolds, Inc., 1839 W. Broad Street.

VERMONT

Burlington—Brodie & Niles Co., Inc., 125 St. Paul Street.

WASHINGTON

Seattle—Sunset Electric Co., 1508 Broadway.
 Spokane—Automotive Elec. Serv. Corp., 218-220 Madison Street.
 Tacoma—Tacoma Auto Electric Co., 705 Pacific Avenue.
 Yakima—Wm. E. Chase Co., 204 West Yakima Avenue.
 Walla Walla—Wm. E. Chase, 114 E. Alder Street.

WEST VIRGINIA

Wheeling—McKelvy-Ewing Electric Co., 937 Market Street.

WISCONSIN

Beloit—L. C. Fiske Electric Co., 417 East Grand Street.
 Madison—Auto Electric Service Co., 124 West Main Street.
 Milwaukee—Wisconsin Magneto Co., 528-54 Milwaukee Street.
 Sheboygan—Acher Electrical Co., 606 North 8th Street.

CANADA

Calgary—Electric Service Co., Ltd.
 Hamilton—Toronto & Hamilton Electric Co., Ltd., 103 McNab Street.
 Montreal—International Electric Co., 97 Bleury Street.
 Toronto, Ont.—Auto Electric Service Co., 8-10 Elm Street.
 Quebec—Louis Lavoie, 173 Bridge Street.
 Regina, Sask.—Motor Supplies, Ltd., 1822 Cornwall Street.
 Saskatoon—Saskatoon Gen. Elec. Co. Sherbrooke, P. Prov., Que.—Wiggert's Battery Service, 71 Wellington St.
 Vancouver, B. C.—Electric Maintenance Co., 737 Pender Street.
 Winnipeg, Manitoba—Lion's Auto Garage, Ltd., 230 Fort Street.

CUBA

Havana—Electric Equipment of Cuba, Galiano—16.

WESTINGHOUSE
ELECTRIC

Please mention The Automobile Trade Directory

SWITCHES, Light (Continued)

Brook Rubber Co., A. S., 100 Purchase St., Boston, Mass.

C-D—See Caskey-Dupree Mfg. Co.

Caskey-Dupree Mfg. Co., Marietta, O. "C-D."

Chapman—See Morse, Frank W.

Chicago Electric Mfg. Co., 2817 S. Halsted St., Chicago, Ill. "Handy."

Clox-Lite Mfg. Co., 24 Scott St., Newark, N. J.

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Cowles & Co., C., New Haven, Conn.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.

Diamond H.—See Hart Mfg. Co.

Eureka—See Morse, Frank W.

Fav Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 243.)

H & H—See Hart & Hegeman Mfg. Co.

Handy—See Chicago Electric Mfg. Co.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H. & H."

Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

L-N—See Leeco-Neville Co.

Leeco-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."

Morse, Frank W., 289 Congress St., Boston, Mass. "Chapman," "Eureka," "Puritan," "Pullrite," "Starlite." (See page 79.)

North East Electric Co., Rochester, N. Y. (See page 525.)

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Pullrite—See Morse, Frank W.

Puritan—See Morse, Frank W.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 313.)

Starlite—See Morse, Frank W.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 926 and 927.)

SWITCHES, Lock

(Ignition switches equipped with lock to prevent unauthorized use of car)

American Devices National Sales Syndicate, 220 S. State St., Chicago, Ill. (See page 599.)

Bo-Hart Auto & Machine Co., Lancaster, N. Y.

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn.

Cox Mfg. Co., 3138 Payne Ave., Cleveland, O. "Motolok." (See page 929.)

Davis—See National Auto Combination Lock Co.

Delta-Star Electric Co., 617-31 W. Jackson Blvd., Chicago, Ill.

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Morkrum Co., 1410 Wrightwood Ave., Chicago, Ill.

Motolok—See Cox Mfg. Co.

National Auto Combination Lock Co., 3105 E. 14th St., Oakland, Cal. "Davis."

Scott Corp., 1584 W. Lake St., Chicago, Ill. "Telecator."

Telecator—See Scott Corp.

SWITCHES, LOCK, FOR FORDS—See Locks, Switch and Coil**SWITCHES, Spark Plug**

(Small switches for attaching to spark plug to facilitate the testing of the ignition)

Balley Co., W. J., Newark, N. J. "C. B."

C. B.—See Balley Co.

Locke Mfg. Co., Ravenna, O.

Means, Eugene D., Towanda, Pa.

SWITCHES, Starter

(See also Starters, Electric.)

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.

Diamond H.—See Hart Mfg. Co.

H & H—See Hart & Hegeman Mfg. Co.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H. & H."

Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.

I-C—See Industrial Controller Co.

Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis. "I-C."

SWITCHES, Steering Wheel

(Ignition Switches for attachment to Steering Wheel)

Connecticut Telephone & Electric Co., Meriden, Conn.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Fav Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 243.)

SWITCH POINTS—See Joints, Speedometer Swivel**SWIVEL LAMPS—See Lights, Spot****SWIVEL LIGHTS—See Lights, Spot****SWIVEL SEARCHLIGHTS—See Lights, Spot****SYSTEMS, ACCOUNTING—See Books, Accounting and Cost Systems**

Everything is listed under the NOUN or principal word

Motolok Ignition Control



Circuits Operated with Yale Key.
No Secondary Operations. Com-
plies with All Local Ordinances
and Insurance Requirements.

COX MFG. CO., 3138 Payne Ave., Cleveland

Every Dealer Wants The 1920 Harvey Spring Book

A **H**ANDY reference book con-
taining specifications and com-
plete data for 1500 different auto-
mobile springs, including old and
new models, both passenger cars

and trucks. Every detail is accu-
rately figured out for your assist-
ance. When you order Springs
the Harvey Spring Book helps you
to specify correctly; it gives you
the information you need when
you need it and removes all
chances for mistakes and delay.



Use the Harvey Spring Book to in-
crease your sale of springs and improve
your service. Send for your copy now;
it's free. Ask your jobber or write us.

Harvey Spring & Forging Co.

106A 17th Street, Racine, Wis.

**One Copy of
Your Catalog**

—IF YOU PLEASE

THE AUTOMOBILE
TRADE DIRECTORY
243 West 39th St., New York

A **N** easy way in which the manufacturer may
keep his buyers informed of what he is
doing, of what he has to offer them in the way of
new goods, is to keep sending us, regularly, his
catalogs and other selling literature.

This gives us an opportunity to make changes
and additions and to insure the correctness of
our classification of the manufacturer's various
products. Your catalog in our files is a cheap
insurance against the possibility of error and
omission. **SEND US YOUR CATALOGS.**

Please mention The Automobile Trade Directory

SYSTEMS, Battery Ignition

(See Coils, Spark; also Timers, Ignition. For combined ignition and starting systems—See Starters, Electric Ignition)

Akar Ignition Co., 157 W. Berkley St., Philadelphia, Pa.
 Atwater Kent Mfg. Co., 4937 Stenton Ave., Philadelphia, Pa. "Unisparker."
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laboratories Co.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
 McCarthy Bros. & Wilson, 2220 Chestnut St., Philadelphia, Pa. (Del., Md., N. J., Va. and District of Columbia Distributors for Philbrin Systems.) (See page 613.)
 New York Coll Co., 333-40 Pearl St., New York, N. Y. "Rhodes."
 North East Electric Co., Rochester, N. Y. (See page 525.)
 Philbrin Corp., 507 S. Broad St., Kennett Square, Pa. (See page 1027.)
 Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
 Rhodes—See New York Coll Co.
 Unisparker—See Atwater Kent Mfg. Co.
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 926 and 927.)

SYSTEMS, Battery Ignition, for Fords

(See Coils, Spark; also Timers, Ignition. For combined ignition and starting systems—See Starters, Electric)

Atwater Kent Mfg. Co., 4937 Stenton Ave., Philadelphia, Pa.
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
 McCarthy Bros. & Wilson, 2220 Chestnut St., Philadelphia, Pa. (Del., Md., N. J., Va. and District of Columbia Distributors for Philbrin Systems.) (See page 613.)
 New York Coll Co., 333-40 Pearl St., New York, N. Y. "Rhodes."
 Philbrin Corp., 507 S. Broad St., Kennett Square, Pa. (See page 1027.)
 Rhodes—See New York Coll Co.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 926 and 927.)

SYSTEMS, BILLING—See Books, Accounting and Cost Systems

SYSTEMS, Chassis Lubricating

Advanced Products Corp., 1711 Vine St., Philadelphia, Pa. "Vanoller."
 Alemite—See Bassick Mfg. Co.
 Bassick Mfg. Co., 361 W. Superior St., Chicago, Ill. "Alemite." (See page 869.)
 Critz Mfg. Co., 1730 S. Los Angeles St., Los Angeles, Cal.
 Essenkay Products Co., 220 W. Superior St., Chicago, Ill. "Mayer."
 Greens Gun—See Ireland & Matthews Mfg. Co.

Ireland & Matthews Mfg. Co., Beard & Chatfield Sts., Detroit, Mich. "Greens Gun."
 M & E—See Merchant & Evans Co.
 Mayer—See Essenkay Products Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M & E."
 Rhode Island Machine & Tool Co.—See Rimtco Lubricator Co.
 Rimtco Lubricator Co., 739 Boylston St., Boston, Mass. (Sole Distributor for Rhode Island Machine & Tool Co., Woonsocket, R. I.) (See page 931.)
 Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon." (See page 353.)
 Romon—See Roberts & Monroe.
 Semco-Skelly—See Smith & Egge Mfg. Co.
 Smith & Egge Mfg. Co., 556 Lafayette St., Bridgeport, Conn. "Semco-Skelly."
 Vanoller—See Advanced Products Corp.

SYSTEMS, Chassis Lubricating for Fords

Forc-Ful—See Zinke Co.
 I. C. Mfg. Co.—See Zinke Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Forc-Ful.") (See page 692.)

SYSTEMS, COST—See Books, Accounting and Cost Systems

SYSTEMS, DRYING—See Rooms, Paint & Varnish Drying

SYSTEMS, Electric Lighting

(See also Dynamos, Electric Lighting; also Starters, Electric)

Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laboratories Co.
 Dyneto Electric Corp., Syracuse, N. Y. (See page 451.)
 Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.
 Ita Manufacturers, Glen Ellyn, Ill.
 L-N—See Leece-Neville Co.
 Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."
 Leonard Electric Co., Ward, Mt. Vernon, N. Y.
 North East Electric Co., Rochester, N. Y. (See page 525.)
 Titan Engineering Co., 603 W. Pearl St., Union City, Ind.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 926 and 927.)

SYSTEMS, GASOLINE FEED—See Tanks, Vacuum; also Systems, Magnetic Pump; also Regulators, Tank Pressure

SYSTEMS, GASOLINE STORAGE—See Tanks, Fuel Storage

SYSTEMS, IGNITION—See Coils, Spark; also Timers; also Magnetos; also Systems, Battery Ignition

SYSTEMS, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

Everything is listed under the NOUN or principal word

RIMTCO LUBRICATING SYSTEM

AUTOMOBILES—TRACTORS—TRUCKS

A high pressure system whereby all bearings can be efficiently lubricated in from 15 to 20 minutes.

We furnish over 300 different types and sizes of fittings, sufficient to meet all requirements of any make vehicles or machinery of kinds.

HIGH PRESSURE COMPRESSOR

Regular, size 2x5; capacity, $\frac{1}{2}$ lb. grease

Medium, size 2x8; capacity, $\frac{3}{4}$ lb. grease

Large, size 2 $\frac{1}{2}$ x8; capacity, 1 $\frac{1}{4}$ lbs. grease

When a bearing is lubricated in this thorough manner, experience has proved that it needs very little attention and less frequent lubrication. Because of these and many other valuable features, this RIMTCO LUBRICATING SYSTEM is worth many times over its cost.



RIMTCO LUBRICATER CO., Inc.

739 Boylston Street, Boston 17 Mass.

DISTRIBUTORS

RHODE ISLAND MACHINE & TOOL CO.

Island Place, Woonsocket, R. I.

MANUFACTURERS

"YORK" FENDERS



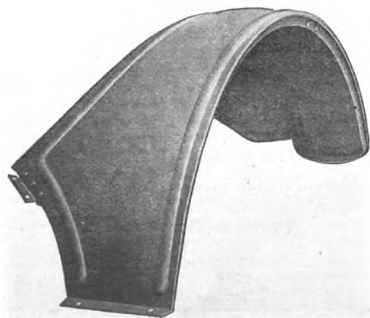
We make exact duplicates of the regular Ford Fenders, Side Pans and Hoods. See your Jobber.

We are prepared to make all sheet metal parts, excepting bodies, for Pleasure Cars, Trucks and Tractors. Send us your specifications.

METAL STAMPINGS

We make our own dies and are prepared to make all kinds of special stampings. Send us your specifications and we will quote you our best price.

YORK CORRUGATING CO.
YORK, PA.



Please mention The Automobile Trade Directory

SYSTEMS, LIGHTING—See Systems, Electric Lighting

SYSTEMS, LUBRICATING CHASSIS—See Systems, Chassis Lubricating

SYSTEMS, Magnetic Pump Gasoline

(For Vacuum Tanks—See Tanks, Vacuum)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

SYSTEMS, OIL—See Tanks and Systems, Oil

SYSTEMS, OVERHEAD WIRING FOR FORDS—See Sets, Wiring

SYSTEMS, SINGLE SPARK IGNITION—See Systems, Battery Ignition

TABLES, LUNCH—See Tables, Picnic

TABLES, Picnic and Lunch

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Baker-Lockwood Mfg. Co., 618 Delaware St., Kansas City, Mo.

Handy-Pandy—See Pandolfo Mfg. Co.

Pandolfo Mfg. Co., St. Cloud, Minn. "Handy-Pandy."

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S., Minneapolis, Minn.

Porter, G. H., 274 15th Ave., San Francisco, Cal.

TACHOMETERS, Aircraft

(See also Counters, Revolution)

Electric Tachometer Co., Perry Bldg., Philadelphia, Pa. "Hopkins."

Hopkins—See Electric Tachometer Co.

Jones-Motrola, 29 W. 35th St., New York, N. Y. "Victometer."

Nelson Instrument Co., 7 Elkins St., Boston, Mass. "Reliance."

Reliance—See Nelson Instrument Co.

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 253.)

Victometer—See Jones-Motrola.

TACKS, Upholstery

Anchor—See North-Judd Mfg. Co.

Atlas Tack Corp., Fairhaven, Mass.

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto-Vehicle Parts Co.

Brewer Tichenor Corp., Cortland, N. Y. "Leathermet." (See page 573.)

Cleveland Tack Works, E. 55th St., Cleveland, O.

Cobb & Drew, Plymouth, Mass.

Crown—See Roberts Corp.

Eagle—See Turner & Seymour Mfg. Co.

Economy—See Nelder Co.

Genesee Tack Co., 39-57 Mt. Hope Ave., Rochester, N. Y.

Imperial—See Roberts Corp.

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)

Leatherlike—See Turner & Seymour Mfg. Co.

Leathermet—See Brewer Tichenor Corp.

Milonite—See Morley Button Mfg. Co.

Morley Button Mfg. Co., 120 Boylston St., Boston, Mass. "Milonite."

Nelder Co., F. A., Augusta, Ky. "Economy."

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Regal—See Roberts Corp.

Ripley & Bartlett Co., Water St., Plymouth, Mass.

Roberts Corp., G. G. 356 South Ave., Whitman, Mass. "Crown," "Regal," "Imperial."

Salmund & Son, Sam, Hanover, Mass.

Shelton Tack Co., Shelton, Conn.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)

Tockwotton Co., 79 S. Main St., Providence, R. I.

Tower Mfg. Co., Madison, Ind.

Traut & Hine Mfg. Co., New Britain, Conn.

Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn. "Eagle," "Leatherlike."

Waterman Co., R. C., Water St., South Hanover, Mass.

TAIL LAMP BRACKETS—See Brackets, Side and Tail Lamp

TAIL LAMPS—See Lamps, Electric Side and Tail; also Lamps, Oil, Side and Tail

TALC, Tire

(Including Soapstone and Mica Tire Powders)

Arnstein, Eugene, 45 W. 36th St., Chicago, Ill. "Century."

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."

Blue Ribbon—See International Metal Polish Co.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Cactus—See Automotive Supply Mfg. Co.

Century—See Arnstein, Eugene.

Cohutta Talc Co., Dalton, Ga.

Doggett, Stanley, 11-13 Cliff St., New York, N. Y.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

E-Fec-Tiv—See Permatite Mfg. Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 229.)

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

International Mica Co., 27 W. Brandywine St. (W. Phila.) Philadelphia, Pa.

Jewell—See Wadsworth-Howland Co.

Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Mico—See Puritan Soap Co.

Nevins Co., Samuel, 109 E. Second St., Philadelphia, Pa.

New England Minerals Co., 67 Milk St., Boston, Mass. "Yankee."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 277.)

Norwesco—See Northwestern Chemical Co.

Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Mico."

Everything is listed under the NOUN or principal word



Illustrating the effects of the jumping roller in ordinary timers.



The Necedah Timer—no waves or bumps even after unusually long service.

NECEDAH TIMER

THE BRUSH IS THE THING
for Ford Cars and Fordson Tractors

The weakness of most timers lies in the fact that the uneven pressure of the roller wears down the steel contacts into waves and bumps.

When the roller passes over these uneven surfaces, it causes "arcs" and "missing," hard starting and uneven running and the life of the timer is cut short.

BUILT FOR UNLIMITED SERVICE

Why not sell your customers a timer that is built for unlimited service—one that will give full value in mileage? The perfected brush assembly of the Necedah Timer insures correctly timed contacts and even wear on the fibre ring and contact segments. The brush presses squarely and firmly against the race and it can't possibly "skip" or "jump."

List Price, Complete, \$2.50

Write for information and attractive trade prices

NECEDAH MANUFACTURING CO.

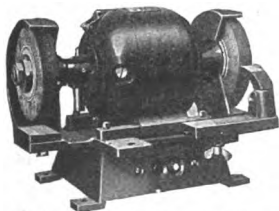
NECEDAH, WISCONSIN

PORTABLE

"HASKINS" SHOP EQUIPMENT

ELECTRIC

BENCH GRINDER



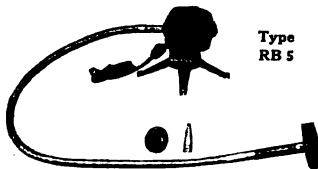
The tool illustrated here is 14" wide, 10" high and weighs 55 pounds. The construction is scientific and sturdy. The motor is of one-quarter H.P. capacity with a speed of 3500 R.P.M. with large overload capacity. The grinding wheels are 3/4"x5".

Rasp



Rasp is constructed with steel flanges 6 1/2" in diameter with a 2-inch buffing face. Furnished for spindle 3/4", 1", 1 1/4" and 1 3/4" in diameter.

TIRE BUFFER



Type
RB 5

SPECIFICATIONS

Motor 1/4 H. P. Ball Bearing.
Shaft 7-16 in. x 5 ft. metal wound shaft.
Speed 1,750 R. P. M.
Grinding Wheel, Scratch Brush and Cone Rasp.
Price \$100.00 F. O. B. Chicago.
Specify voltage and current when ordering.

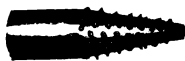
SCRATCH BRUSH



GRINDING WHEEL



ACCESSORIES



CONE RASP

R. G. HASKINS COMPANY
27 SO. DESPLAINES ST. CHICAGO, ILL.

Please mention The Automobile Trade Directory

TALC, Tire (Continued)

Richmond Mica Co., 801 E Main St., Richmond, Va. "Rimco."
 Rio-Nie—See Durkee-Atwood Co.
 Rimco—See Richmond Mica Co.
 St. Louis Rubber Cement Co., 8046 Lambdin Ave., St. Louis, Mo.
 U. S. Mica Mfg. Co., Forest Park, Ill.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Whittaker, W. H., 245 Front St., New York, N. Y.
 Williams & Co., C. K., N. 18th St., Maston, Pa.
 Wonder Worker—See Hall-Thompson Co.
 Yankee—See New England Minerals Co.

TANDEM ATTACHMENTS, MOTOR-CYCLE—See Seats, Motorcycle Tandem**TANK CAPS FOR FORDS—See Caps, Gasoline Tank****TANK FILLER STRAINERS—See Strainers, Radiator and Tank Filler****TANK FILLING TUBES—See Tubes, Non-Explosive Tank Filling****TANK GAGES—See Gages, Gasoline Tank; also Gages, Vacuum Tank****TANK KEYS—See Keys, Acetylene****TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank****TANKS, Acetylene**

(For acetylene lights on car also including tanks for welding; see also Machines, Autogenous Welding)

Air Reduction Co., 120 Broadway, New York, N. Y. "Alroco."
 Alroco—See Air Reduction Co.
 Commercial Acetylene Supply Co., 80 Broadway, New York, N. Y.
 Hackney—See Pressed Steel Tank Co.
 Headlight Gas Co., 2136 N. Lawrence Ave., Wichita, Kans.
 International Acetylene Co., Middletown, Conn. "Meteor."
 Meteor—See International Acetylene Co.
 Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis. "Hackney."
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.

TANKS, Chemical Fire

(For installation on Motor Propelled Fire Apparatus)

Ajax Fire Engine Works, Bush Terminal Bldg. No. 16, Brooklyn, N. Y.
 Childs Co., O. J., 138 Liberty St., Utica, N. Y.
 Northern Fire Apparatus Co., 2423 University Ave., S. E., Minneapolis, Minn.
 Obenchain-Boyer Co., Logansport, Ind. (See page 135.)
 Pirsch & Sons Co., Peter, Kenosha, Wis. (See page 129.)
 Prospect Mfg. Co., Prospect, O.

TANKS, COMPRESSION—See Tanks, Vacuum and Compression Gasoline**TANKS, Emergency or Reserve**

(For carrying a reserve supply of Gasoline or Oil; for Reserve Cocks—See Valves, Two Way Tank)

Bear—See Woolwine Metal Products Co.
 Boyle Mfg. Co., Los Angeles, Cal. (See page 188.)
 Cox Brass Mfg. Co., N. Pearl & Van Woert Sts., Albany, N. Y. (See page 171.)
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 421.)
 Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
 Woolwine Metal Products Co., Eighth St. & Santa Fe Ave., Los Angeles, Cal. "Bear."

TANKS, FIRE—See Tanks, Chemical Fire**TANKS, FUEL FEED—See Tanks, Vacuum and Compression Gasoline****TANKS, Fuel and Water**

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
 Air-Tight Steel Tank Co., Mansion St. & B. & O. R. R., Pittsburgh, Pa. "Atsco."
 Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 Atsco—See Air-Tight Steel Tank Co.
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
 Sadger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
 Slickman, S., New York, N. Y. (See page 761.)
 Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.
 Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
 Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."
 Brusco—See Brummeler's Sons Co.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Bush Mfg. Co., Hartford, Conn. (See page 787.)
 Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representative.) (See page 335.)
 Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
 Chicago Mfg. Co., 1453-64 Michigan Ave., Chicago, Ill.
 Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 1003.)
 Clayton's Sons, Frank B., 1227-33 N. 11th St., Philadelphia, Pa.
 Columbus Auto Brass Co., Columbus, O. (See page 477.)
 Cornwall Mfg. Co., Cleveland, O. (See page 937.)
 Davis-Watkins Mfg. Co., 123 Morgan St., Jersey City, N. J.
 Derby Coppersmithing & Sheet Metal Contracting Co., First & Caroline Sts., Derby, Conn.
 Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
 Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.

Everything is listed under the NOUN or principal word

G. P. & F. SERVICE
 "KNOWING HOW SINCE '81"

STAMPINGS

Oil Pans,
 Radiator Shells,
 Gear Covers,

Chain Covers,
 Cylinder Covers
 Spark Plug Covers, etc.

Gasoline Tanks



GASOLINE TANKS

G. P. & F. Gasoline Tanks are made accurately according to your specifications.

Send blue prints showing shape and size of your tanks for quotations, stating quantity required.

Our experience, facilities and organization enable us to quote you attractive prices.

Write us today



MAXIM SILENCERS

It is the perfected product of the nationally known H. P. Maxim.

By equipping your motor vehicles with Maxim Silencers, you are putting a strong sales argument in place of a nameless muffler.

You will find price interesting.

PRESSED STEEL PARTS STAMPINGS

GEUDER, PAESCHKE & FREY CO.
 1365-1700 ST. PAUL AVE., MILWAUKEE, WIS.



OVER 15 ACRES OF FLOOR SPACE

Please mention The Automobile Trade Directory

TANKS, Fuel & Water (Continued)

Ellison Sheet Metal Works, 1001 30th St., Milwaukee, Wis.
 Evans Mfg. Co., First Ave. & 21st St., Moline, Ill.
 Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis. (See page 891.)
 Fostoria Pressed Steel Co., Fostoria, O. (See page 405.)
 Freeland Sons Co., E. F., Sturgis, Mich.
 Geuder, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. (See page 935.)
 Hackney—See Pressed Steel Tank Co.
 Janney-Steinmets & Co., Philadelphia, Pa. "Jasco." (See page 937.)
 Jasco—See Janney-Steinmets & Co.
 Johnson's Automobile Sheet Metal Works, W. N., 620-22 South J St., Richmond, Ind.
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 125.)
 Maco—See Automotive Sheet Metal Co.
 Made-O-Metal—See Pandolfo Mfg. Co.
 Merts Mfg. Co., John, Water & Decatur Sts., Sandusky, O.
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
 Morrison & Sons, Frank, 1330 W. 11th St., Cleveland, O. (See page 937.)
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
 Pandolfo Mfg. Co., St. Cloud, Minn. "Made-O-Metal."
 Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.
 Perfex Radiator Co., Racine, Wis.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis. "Hackney."
 Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
 Pullman Ventilator & Mfg. Co., West York Ave. & W. M. R. R., York, Pa.
 S. & J.—See Shotwell-Johnson.
 Scalf & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.
 Sexton Can Co., 123 Broad St., Boston, Mass.
 Shotwell-Johnson, Minneapolis, Minn. "S-J." (See page 340.)
 Standard Steel Works, 1740 Tracy Ave., Kansas City, Mo. (See page 130.)
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 Trageser Steam Copper Works, John, 447-57 W. 20th St., New York, N. Y. (See page 939.)
 Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.

Western Drop Forge Co., Marion, Ind.
 Western Metal Specialty Co., Milwaukee, Wis. (See page 657.)
 Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.
 Wilson & Bowen, 1318 S. Main St., Los Angeles, Cal.
 Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
 Xardell Corp., W. Pleasant St., Utica, N. Y.
 York Corrugating Co., York, Pa. (See page 931.)

TANKS, GASOLINE AND WATER—See
 Tanks, Fuel; also Tanks, Emergency and Reserve; also Tanks and Systems, Gasoline

TANKS, Inner Tube Testing

(Specially formed tanks for locating leaks in tubes)
 Boyle Mfg. Co., Los Angeles, Cal. (See page 189.)
 Dover Stamping & Mfg. Co., 325 Putnam Ave., Cambridge, Mass.
 Haco—See Heller-Aller Co.
 Heller-Aller Co., Napoleon, O. "Haco."
 P. S. M. Co., 3116-36 Snelling Ave., Minneapolis, Minn. (See page 1047.)

TANKS and SYSTEMS, Gasoline Storage

Arco—See Tekheim-Mfg. Co.
 Air-Tight Steel Tank Co., Manston St. & B. & O. R. R., Pittsburgh, Pa. "Atasco."
 Allen Pressure System Co., 24 W. 61st St., New York, N. Y. "Apasco."
 American Oil Pump & Tank Co., Findlay & Dalton Sts., Cincinnati, O.
 Anderson Visible Pump & Tank Co., Savannah, Ga.
 Apasco—See Allen Pressure System Co.
 Atasco—See Air-Tight Steel Tank Co.
 Avon Specialties Mfg. Co., 44-46 Market Pl., Baltimore, Md. "U-O-What-U-Get." (See page 719.)
 Barnes Mfg. Co., Mansfield, O.
 Beman Automatic Oil Can Co., Meadville, Pa.
 Big Gusher—See Western Oil Pump & Tank Co.
 Biggs Boiler Works Co., 1007 Bank St., Akron, Ohio.
 Bowser & Co., S. F., Fort Wayne, Ind.
 Boyle-Dayton Co., 61st St. & Santa Fe Ave., Los Angeles, Cal.
 Brady—See Visible Measure Gasoline Dispenser Co.
 Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.
 Chicago Steel Tank Co., 1313 S. 55th St., Cicero, Ill.
 Clear Vision Pump Co., 822 E. Harry St., Wichita, Kans.
 Climax—See Keystone Boiler & Foundry Co.
 Columbian Steel Tank Co., 1601-21 W. 12th St., Kansas City, Mo.
 Dayton Pump & Mfg. Co., Fifth & Norwood Sts., Dayton, O. "Rapidayton."
 Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
 Eastern Oil Tank Co., 146 Fletcher St., Lowell, Mass.
 Economy Gas Machine Co., Rochester, N. Y.

Everything is listed under the NOUN or principal word

Sheet Metal Parts
for
Automobiles, Trucks, Tractors

Gasoline Tanks

**Metal Boxes
Pans, Trays
Ventilators, etc.**

Metal Stampings

*Prompt quotations
to your inquiries*

Frank Morrison & Sons

1330 West 11th St. Cleveland, O.



**THE ONE SURE WAY
OF SAFEGUARDING
YOUR GASOLINE**

Made of the finest, seamless, drawn steel, tinned and tested—it cannot leak no matter how rough the service.

The "Jasco" tank is service-proved and time-demonstrated.

JANNEY, STEINMETZ & COMPANY
Main Office, Philadelphia
New York Office, Hudson Terminal Building

FUEL TANKS

for
**Automobiles, Trucks,
Tractors, Aeroplanes,
Motorcycles and
Motorboats**

**LIGHT METAL
STAMPINGS**

**Shearing, Punching
and Forming**

**SHEET METAL
SPECIALTIES**

of every character
**Metal Boxes, Pans,
Trays, Guards, etc.**

**THE CORNWALL
MANUFACTURING
COMPANY**

CLEVELAND

OHIO

TANKS and SYSTEMS, Gasoline Storage (Continued)

Equipment Supply Co., York, Pa. "Standard."
 Eslein Sheet Metal Works, 1001 30th St., Milwaukee, Wis.
 Fabricated Steel Products Corp., Box 909, Leetonia, O. (See page 715.)
 Farr Hydraulic Systems, 11 Broadway, New York, N. Y.
 Fleckenstein Visible Gasometer Co., 328 Bond Ave., Grand Rapids, Mich.
 Freeland Sons Co., B. F., Sturgis, Mich. "Pioneer."
 Freeland Steel Tank Co., Second & Adams Sts., Portage, Wis.
 Geyser—See Visible Gasoline Dispenser Co.
 Gilbert & Barker Mfg. Co., Springfield, Mass. (See page 939.)
 Gilmore-Winans Co., 306 Owen Bldg., Detroit, Mich. (Michigan Representatives for Guarantee Tanks.) (See page 853.)
 Graver Corp., 4809 Todd Ave., East Chicago, Ind.
 Groetken Pump Co., 171 Middle Ave., Aurora, Ill. "Jumbo."
 Guarantee Liquid Measure Co., Rochester, Pa. (See page 1005.)
 Haco—See Heller-Aller Co.
 Hall Mfg. Co., Cedar Rapids, Iowa.
 Harry Steel Co., O. K., 2333-35 Papin St., St. Louis, Mo.
 Hawkeye—See Tokheim Mfg. Co.
 Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. "Quality." (See page 139.)
 Heller-Aller Co., Napoleon, O. "Haco."
 Hull—See Southern Foundry & Mfg. Co.
 Hummell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (See page 493.)
 Ideal—See Kupferle Bros. Mfg. Co.
 Ideco, Inc., 311 N. Fifth St., Springfield, Ill.
 Imperial—See Western Oil Pump & Tank Co.
 Ingalls Mfg. Co., 283 Fifth Ave., Milwaukee, Wis.
 Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.
 Julian Pump Co., Jamestown, N. Y. "Square Deal."
 Jumbo—See Groetken Pump Co.
 Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
 Keystone Boller & Foundry Co., Landisville, Pa. "Climax."
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.
 Kupferle Bros. Mfg. Co., 600-04 N. Second St., St. Louis, Mo. "Ideal."
 Leetonia Boller Co., Leetonia, O.
 Little Gem—See Western Oil Pump & Tank Co.
 Little Sampson—See Western Oil Pump & Tank Co.
 Martini & Hunske Co., of America, 1201 Hudson St., Hoboken, N. J.
 Milwaukee Tank Works, Fratney & Becker Sts., Milwaukee, Wis.
 Mogul—See Western Oil Pump & Tank Co.
 Monarch Radiator & Fender Works, 632-33 Ellis St., San Francisco, Cal.
 Morrison Bros., 24th & Elm Sts., Dubuque, Ia.
 Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
 Morrison Bros., Elm St., Dubuque, Ia.
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
 National Store Specialty Co., Bareville, Pa. "Pennsylvania."

Nebraska & Iowa Steel Tank Co., 1300 Willis Ave., Omaha, Neb. "Nelo."
 Neil & Co., Wm., 617 Division St., Chicago, Ill.
 Nelo—See Nebraska & Iowa Steel Tank Co.
 Nicholson Co., Fancourt St. & Duquesne Way, Pittsburgh, Pa.
 Niles Steel Tank Co., Niles, Mich.
 Norwich Wire Works, Lackawanna Ave., Norwich, N. Y.
 Peerless Equipment Co., 6023 S. State St., Chicago, Ill.
 Pennsylvania—See National Store Specialty Co.
 Perfection—See Western Oil Pump & Tank Co.
 Pioneer—See Freeland Sons Co.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 Quality—See Hell Co.
 Rapidayton—See Dayton Pump & Mfg. Co.
 Raymond Garage Equipment Co., Center St., Adrian, Mich.
 Scalf & Sons Co., Wm. B., Fifth Ave. & Wood St., Pittsburgh, Pa.
 Sheet Metal Products Co., Duluth, Minn.
 Shotwell Pump & Tank Co., 22 Parkman St., Boston, Mass.
 Southern Foundry & Mfg. Co. (Seven Hills), Owensboro, Ky. "Hull."
 Square Deal—See Julian Pump Co.
 Standard—See Equipment Supply Co.
 Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
 Tirrill Gas Machine Lighting Co., 103 Park Ave., New York, N. Y.
 Tokheim Oil Tank & Pump Co., Wabash Ave. & Wabash R.R., Fort Wayne, Ind. "Acro," "Hawkeye," "Victory."
 Truesener Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 939.)
 U-C-What-U-Get—See Avon Specialties Mfg. Co.
 Universal Iron & Supply Co., St. Louis, Mo.
 Vac Liquid Equipment Co., 1125 C Ave., W., Cedar Rapids, Ia.
 Victory—See Tokheim Oil Tank & Pump Co.
 Visible Gasoline Dispenser Co., House Bldg., Pittsburgh, Pa. "Geyser."
 Visible Measure Gasoline Dispenser Co., 700-800 W. Breckenridge St., Louisville, Ky. "Brady."
 Visible Pump Co., Central Bldg., Fort Wayne, Ind.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 923.)
 Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.
 Western Oil Pump & Tank Co., 2437 Kosciuszko St., St. Louis, Mo. "Little Sampson," "Imperial," "Perfection," "Little Gem," "Big Gusher," "Mogul."

TANKS and SYSTEMS, Oil

(For storing and handling oil in filling stations)

Jiffy—See Protecto Pump Co.
 Protecto Pump Co., Dayton, O. "Jiffy."

TANKS, Oxygen

(For use in Autogenous Welding or Carbon Removing)

Air Reduction Co., 120 Broadway, New York, N. Y. "Alroco."
 Alroco—See Air Reduction Sales Co.
 Burdett Oxygen Co., 1401-05 Jackson Blvd., Chicago, Ill.

Everything is listed under the NOUN or principal word

Automobile Cables

Starting—Lighting—Ignition

We specialize in the production of cables to meet the requirements of each individual piece of work. For that reason we carry no cable in stock.

That's why our cables give such perfect uniform results and are so much in demand by the entire vehicle trade.

It will pay you to let us figure on your future requirements.



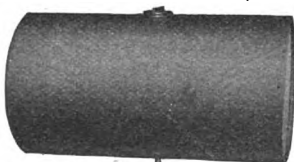
ROME WIRE CO.
ROME, N. Y.

TRAGESER

Gasoline Tanks
Outlast the Truck



Welded and tinned inside and out by hot process.
Made from No. 16 gauge steel.
Brass "Filler" cap.



Dished Head
Pressure
Tank.
All are individually
tested by air
pressure
under water
Send blue-
prints for
special
tanks.

John Trageser Steam Copper Works
447-457 W. 26th STREET NEW YORK



Better your service
through GILBERT & BARKER
Gasoline Curb Pumps

Your customers are in just as much of a hurry pleasure bent as on business trips.

Quick service satisfies them.

G. & B. equipment assures that safe, speedy, accurate delivery coupled with a dependability which gives complete satisfaction to motorist and owner.

Write for Bulletin No. 76

GILBERT & BARKER MFG. CO.
SPRINGFIELD, MASS.

Please mention The Automobile Trade Directory

TANKS, Oxygen (Continued)

Electroxx Co., ft. Bridge, Peoria, Ill.
 Linde Air Products Co., 30 E. 43d St., New York, N. Y.
 Rego—See Universal Oxygen Co.
 Superior Oxygen Co. of Mo., 115 Plum St., St. Louis, Mo.
 Tariffville Oxygen & Chemical Co., Tariffville, Conn.
 Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."

TANKS, RESERVE—See Tanks, Emergency

TANKS, STORAGE—See Tanks, Gasoline Storage

TANKS, Tire Inflating

(Steel tanks filled with compressed air or carbonic acid gas for carrying on car)

Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.
 Liquid Carbonic Co., 2100 S. Kedzie Ave., Chicago, Ill.

TANKS, Vacuum and Compression, Gasoline

(For Magnetic Pumps—See Systems, Magnetic Pump)

Carter Carburetor Co., 2338-40 N. Spring Ave., St. Louis, Mo.
 Impulse Tank Co., 2322 N. Spring Ave., St. Louis, Mo.
 Motovic Products Corp., 441 State St., Detroit, Mich.
 Sparks-Withington Co., Jackson, Mich. "Sparton."
 Sparton—See Sparks-Withington Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Vapor-Valve Co., 2322 N. Spring Ave., St. Louis, Mo. "Vaporspray."
 Vaporspray—See Vapor-Valve Co.

TANKS, WATER—See Tanks, Fuel

TAP EXTRACTORS—See Extractors, Broken Tap

TAPE, Insulating and Tire

Anchor Packing Co., 72 Murray St., New York, N. Y. "Apex." (See page 675.)
 Anchor Webbing Co., 300 Brook St., Pawtucket, R. I.
 Apex—See Anchor Packing Co.
 Bestytet—See St. Louis Rubber Cement Co.
 Boston Woven Hose & Rubber Co., Cambridge, Mass. "Evergrip."
 Clifton Mfg. Co., 45 Brookside Ave. (Jamaica Plain), Boston, Mass.
 Evergrip—See Boston Woven Hose & Rubber Co.
 Gilmer Co., L. H., Philadelphia, Pa. (See page 117.)
 Goodrich Co., B. F., S. Main St., Akron, O.
 Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 J-M—See Johns-Manville Co.
 Johns-Manville Co., E. W., Madison Ave. & 41st St., New York, N. Y. "J-M."
 Kerite Insulated Wire & Cable Co., New York, N. Y. (See page 1067.)

Manson—See Okonite Co.
 Multibestos Co., Walpole, Mass. "Stanwal." (See page 615.)
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
 New York Insulated Wire Co., 114 Liberty St., New York, N. Y.
 Okonite Co., Passaic, N. J. "Manson."
 Red Cross—See National Rubber & Specialties Co.
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., 506 Russell Ave., Middletown, Conn. "Rusco." (See page 121.)
 St. Louis Rubber Cement Co., 2446 Lambdin Ave., St. Louis, Mo. "Bestytet."
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 309.)
 Stanwal—See Multibestos Co.
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Wood Mfg. Co., Frank, 45 E. 17th St., New York, N. Y.

TAPE, TIRE—See Tape, Insulating

TAPER PINS—See Pins, Taper

TAPER SHIMS, REAR AXLE FOR FORDS
 —See Shims, Rear Axle Taper

TAPERING MACHINES—See Machines, Spring Leaf Tapering

TAPES, Airplane Paper

Easimovv—See Ideal Coated Paper Co.
 Ideal Coated Paper Co., Brookfield, Mass. "Easimovv."

TAPPET SILENCERS, OVERHEAD VALVE
 —See Silencers, Overhead Valve.

TAPPETS, VALVE—See Rods, Adjustable Valve Lift

TAPPING DRILLS—See Drills, Upright

TAPPING MACHINES—See Machines, Tapping

TAPS, Dies and Screw Plates

Acme—See American Tap & Die Co.
 Adamantine—See American Tap & Die Co.
 Alvord Reamer & Tool Co., Millersburg, Pa. (See page 835.)
 American Tap & Die Co., Greenfield, Mass. "Adamantine," "Acme," "Eagle." (See page 915.)
 Bay State Tap & Die Co., 75 Chauncy St., Mansfield, Mass.
 Besly Co., Charles H., 112-24 N. Clinton St., Chicago, Ill.
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
 Blancke Twist Drill & Tool Co.—See Blancke Co.
 Brubaker & Bros., W. L., 50 Church St., New York, N. Y.
 Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt. "Derby."

Everything is listed under the NOUN or principal word

ALL-AMERICAN TRUCKS



Performance Records Like These Make All-American Sales

Here is more proof of All-American Strength, Durability, Speed and Economy. Proof that backs up every claim we make. Read this letter from Kohn & Pollock, Inc., of Baltimore.

"After eight months of daily operation (except Sundays and holidays), we are pleased to report the truck has stood up wonderfully; and it has exceeded our expectations, in taking care of quick deliveries, on account of its speed.

"It is most economical in fuel consumption; and the maintenance to date has cost nothing, except for gas, lubricating oils and greases, as no repairs have been required to any part of the truck.

"We cheerfully recommend the "All-American" to be and do all that is claimed for it by its manufacturers."—Kohn & Pollock, Inc., Baltimore, Md.

If you're interested—Ask us for more All-American Facts

Let us tell you in detail about All-American construction. Let us show you why owners everywhere are boosters for the All-American Truck—the biggest, best truck value on the market—The Ton-Mile Champion.

Write today for Booklet R, and get the story of All-American Supremacy.

ALL-AMERICAN TRUCK CO., 6503 W. Grand Ave., Chicago, Ill.

Please mention The Automobile Trade Directory

TAPS, DIES AND SCREW PLATES (Continued)

Card Mfg. Co., S. W., Mansfield, Mass. "Paragon."
 Carpenter Tap & Die Co., J. M., 17 Newell Ave., Pawtucket, R. I.
 Chamption Blower & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.
 Conant & Donelson Co., Conway, Mass. "Reliable."
 Derby—See Butterfield & Co.
 Detroit Twist Drill Co., Detroit, Mich. (See page 777.)
 Eagle—See American Tap & Die Co.
 GTD—See Greenfield Tap & Die Corp.
 Green River—See Greenfield Tap & Die Corp.
 Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning," "Green River," "Hercules," "G T D." (See page 915.)
 Harding Bros., 1770 Berteau Ave., Chicago, Ill.
 Helmet—See Besly & Co.
 Hercules—See Greenfield Tap & Die Corp.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 925.)
 Lightning—See Greenfield Tap & Die Corp.
 Little Giant—See Greenfield Tap & Die Corp.
 Manufacturers Equipment Co., 169 N. Jefferson St., Chicago, Ill.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Oster Mfg. Co., 2162 E. 61st St., Cleveland, O.
 Paragon—See Card Mfg. Co.
 Polk & Son Co., A. J., Millersburg, Pa.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. (See page 373.)
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Reliable—See Conant & Donelson.
 Remington Tool & Machine Co., 97 Haverhill St., Boston, Mass.
 Republic Tool & Mfg. Co., 1390-1401 W. Ninth St., Cleveland, O. (Jobbers.) (See page 305.)
 Russell Mfg. Co., Carpenters Lane, Greenfield, Mass.
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Thistle—See Winter Bros. Co.
 Toledo Tap & Die Co., Clinton St. & Oakwood Ave., Toledo, O.
 W & P—See Webster & Perks Tool Co.
 Webster & Perks Tool Co., Springfield, O. "W. & P."
 Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

TAPS, Dies and Screw Plates, for Fords

Butterfield & Co., (Division of Union Twist Drill Co.) Derby Line, Vt.
 G. T. D.—See Greenfield Tap & Die Corp.
 Greenfield Tap & Die Corp., Greenfield, Mass. "Lightning," "G. T. D." (See page 915.)
 Lightning—See Greenfield Tap & Die Corp.
 Wells & Son Co., F. E., 75 Ridell St., Greenfield, Mass.

TAR REMOVING COMPOUNDS—See
Compounds, Tar Removing

TAXIMETERS

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Popp," "Jones."

Jones—See American Taximeter Co.
 Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.
 Pittsburgh Taximeter Co., Manufacturers Bldg., Pittsburgh, Pa.
 Popp—See American Taximeter Co.
 Stoll Mfg. Co., 33rd & Walnut Sts., Denver, Colo.

TEE STEEL—See Steel, Angle

TEES, PIPE—See Fittings, Pipe

TELEPHONES, Airplane

Aviaphone—See Dictograph Products Corp.
 Dictograph Products Corp., 220 W. 42d St., New York, N. Y. "Aviaphone."

TELEPHONES, Limousine

(For Speaking Tubes—See Tubes, Speaking; For Annunciators—See Annunciators)

American Electric Co., 6401 S. State St., Chicago, Ill. "Carphone."
 Carphone—See American Electric Co.
 Chau-Phone—See Western Electric Co.
 Dictograph Products Corp., 220 W. 42d St., New York, N. Y.
 Gohring—See Taylor Co.
 Klaxon, Detroit, Mich. "Stentor." (See page 943.)
 Motorphone—See Stanley & Patterson.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Stanley & Patterson, West & Hubert Sts., New York, N. Y. "Motorphone."
 Stentor—See Klaxon.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."
 Western Electric Co., 110 Williams St., New York, N. Y. "Chau-Phone."

TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator

TEMPERATURE INDICATING METERS—
See Meters, Water Temperature; also
Meters, Oil Temperature Indicating

TEMPERING FURNACES—See Furnaces,
Annealing

TEMPERING, METAL—See Treating, Heat

TENDERS, Tractor

(Wheeled truck equipped with fuel, oil and water tanks)
 Steinke Bros. Mfg. Co., Schradski Bldg., Peoria, Ill.

TENONING MACHINES—See Machines,
Wood Mortising

TENTS, Touring

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Arapahoe—See Brooks Tent & Awning Co.
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
 Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo. "Arapahoe."

Everything is listed under the NOUN or principal word



OUR quality tire assures
Distribution Jobbers
and Dealers excellent re-
turns and is a real honest to
goodness business builder.

1440 Michigan Avenue
Chicago, Ill.

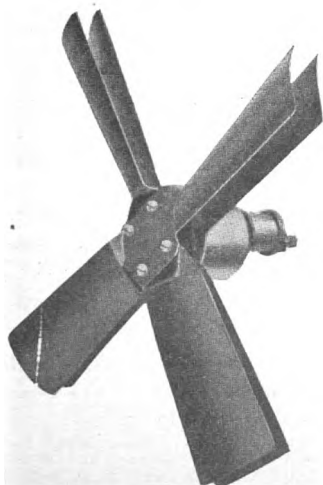


A distinguishing feature
of the majority of qual-
ity closed cars is the
Klaxon Stentor Auto-
phone.

KLAXON

STENTOR AUTOPHONE
DETROIT - MICHIGAN

MULTIBLADE FAN



Light in Weight
Yet
Very Rigid

Moves Air
Through Radiator
With Great Velocity

DETROIT CARRIER & MANUFACTURING CO.
DETROIT

TENTS, Touring (Continued)

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo. "Pullman."
 Carnie-Gouldie Mfg. Co., 22d & Grand Sts., Kansas City, Mo.
 Channon Co., H., 150 N. Market St., Chicago, Ill.
 Cleveland-Akron Bag Co., Cleveland, O. (See page 97.)
 Clifton Mfg. Co., 325-27 Pleasant St., Waco, Tex.
 Compac Tent Co., 425 W. Tenth St., Indianapolis, Ind.
 Cruiser Motor Car Co., Madison, Wis.
 Demoin—See Des Moines Tent & Awning Co.
 Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoin."
 Enterprise Bed Co., Hammond, Ind.
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.
 Metropolitan Air Goods Co., Chestnut Hill Ave., Athol, Mass. "Utility."
 Phoenix Tent & Army Co., First & Monroe Sts., Phoenix, Ariz.
 Plummer Mfg. Co., W. A., San Francisco, Cal.
 Pullman—See Burch Mfg. Co.
 Red Seal—See Schaefer Tent & Awning Co.
 Schaefer Tent & Awning Co., Denver, Colo. "Red Seal." (See page 119.)
 Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
 Strong Bungalow Co., 226 Edgewood St., Hartford, Conn.
 Tentobed Co., 3300 W. Jackson Blvd., Chicago, Ill.
 Utility—See Metropolitan Air Goods Co.
 Wenzel Tent & Duck Co., H., 1035 Paul St., St. Louis, Mo.
 Way Sagless Spring Co., E. Hennepin St. & Fifth Ave., S. E., Minneapolis, Minn.

TERMINAL CLEANING TOOLS—See Tools, Terminal Cleaning**TERMINAL FORMING TOOLS—See Tools, Wire Terminal Forming****TERMINAL TONGS—See Tools, Storage Battery Repair****TERMINALS, STORAGE BATTERY—See Connectors, Storage Battery****TERMINALS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair****TERMINALS, Timer for Fords**

Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 1007.)
 Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "United."
 United—See Pedersen Lubricator Co.

TERMINALS, Wire

(See also Connectors, Battery)

B. A. T. Terminal Co., 105 Vanderveer St., Brooklyn, N. Y. "Bayleys."
 (See page 945.)

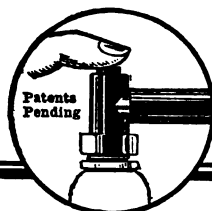
Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.
 Bayleys—See B. A. T. Terminal Co.
 Becco—See Michigan Motor Specialties Co.
 Blauvelt Co., James P., Cedar St., Nyack, N. Y.
 Blublaste Motor Specialties Corp., 49-51 W. 68th, New York. "United." (See page 949.)
 Braemell, J. H., 26 Court St., Brooklyn, N. Y.
 Champion Spark Plug Co., 802 Avondale Ave., Toledo, O. "J-D." (See page 727.)
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Eureka—See Morse, Frank W.
 Fahnestock Electric Co., East Ave. & Eighth St., Long Island City, N. Y.
 Fitzgerald Mfg. Co., Torrington, Conn. (See page 439.)
 Grip-Tite—See Universal Products Co.
 Hadco—See Hadden-Messinger Corp.
 Hadden-Messinger Corp., 42 Lorimer St., Brooklyn, N. Y. "Hadco." (See page 821.)
 Herz, 182 Locust Ave., New York, N. Y.
 Hi-Po Waterproof Battery Corp., South Norwalk, Conn.
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 243.)
 J-D—See Champion Spark Plug Co.
 Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 Morse, Frank W., 289 Congress St., Boston, Mass. "Eureka." (See page 79.)
 Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.
 Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. (See page 635.)
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Shain, Chas. D., Brooklyn, N. Y.
 Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 293.)
 United—See Blublaste Motor Specialties Corp.
 Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Grip-Tite."

TEST CLIPS—See Clips, Electrical Test**TEST COCKS FOR FORDS—See Gages, Oil****TEST STANDS, ELECTRIC—See Stands, Electric Test****TESTERS, ACID—See Hydrometers****TESTERS, BATTERY—See Gages, Battery; also Hydrometers****TESTERS, Coil**

(Board for shop use for testing and adjusting coils)

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.
 Durham Co., P. J., 244 W. 49th St., New York, N. Y.
 F-B Electric & Mfg. Co.—See Fairbanks Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 619 to 622.)

TESTERS, ELECTRICAL—See Instruments, Electrical**Everything is listed under the NOUN or principal word**



Bayley's Automatic

INSULATED SPARK PLUG TERMINAL

For Automobiles—Motorcycles—
Motorboats—Aeroplanes

Instantly connected—instantly disconnected. "The Button does it!" Forms a rigid contact. The Spring locks it! Attached by hand—no tools needed. Transmits a stronger spark—gives added power. Prevents short circuits, shocks and burnt fingers. Practical—time saving—economical. Highest quality. To introduce them we will give

4 B. A. T. Terminals for \$1.50

with a money back guarantee if not satisfied. Jobbers and Dealers write for proposition.

B. A. T. TERMINAL CO.

105 Vanderveer St. Brooklyn, N. Y.

The Cincinnati Screw Co.
Twightwee, Ohio
(Cincinnati Suburb)



Dependable Screw Machine Products

Auto, Truck, Tractor and Engine
Parts Furnished Complete

Service—Quality Assured

Replace Parts for Popular Cars
Guaranteed to Fit

The Cincinnati Screw Co.

The New FORD Sensation

HY-POWER TIMER

For Ford Cars, Ford Trucks and Fordson Tractors

PRICE

\$1.50

Can't
Short-Circuit

Outlasts
Four
Ordinary
Timers



Case-Hardened Sliding
Shoe and Convex
Contacts make perfect spark
and full power certain

Average Life Over 16,000 Miles

Enthusiastic testimonials come in every mail! Average mileage reported well over 16,000—one user reports 35,000 and still going strong.

Dealers: Get aboard this one! Cracking good proposition—write for it!

BENFORD'S 1920

Adamant
Insulator

Pure Nickel
Electrodes

"Distinguished
by its coat of
Gold"



Specialty
Processed
Asbestos
Gaskets

Double Lock
Washer

GOLDEN GIANT SPARK PLUG

Price **\$1.00**

Benford Auto Products, Inc.
Mt. Vernon New York

TESTERS, GASOLINE—See Hydrometers

TESTERS, GEAR—See Instruments, Gear Testing

TESTERS, METAL—See Instruments, Metal Testing

TESTERS, PLUG—See Testers, Spark Plug

TESTERS, RUBBER—See Instruments, Rubber Testing

TESTERS, Spark Plug

Best—See Perkins Spark Plug Tester Corp.

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sta., Springfield, O. "Buckeye."

Magie Mfg. Co., Chicago, Ill.

Moeller, J. F., 10822 S. Western Ave., Chicago, Ill. "Momaco."

Momaco—See Moeller, J. F.

Morgan, C. W., 1336 Michigan Ave., Chicago, Ill.

Perkins Spark Plug Tester Corp., 350 Broadway, New York, N. Y. "Best."

Radamax—See Smith & Sons.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) "Radamax."

(See page 253.)

TESTING BUSHINGS—See Bushings, Spark Plug Testing

TESTING DYNAMOMETERS—See Dynamometers, Electric Testing

TESTING FIXTURES, MAGNETO FOR FORDS—See Fixtures, Magneto Aligning and Testing

TESTING HYDROMETERS—See Hydrometers, Testing

TESTING INDICATORS—See Indicators, Gasoline Engine

TESTING INSTRUMENTS, ELECTRICAL CIRCUIT—See Instruments, Electrical Circuit Testing

TESTING INSTRUMENTS, GEAR—See Instruments, Gear Testing

TESTING INSTRUMENTS, METAL—See Instruments, Metal Testing

TESTING INSTRUMENTS, RUBBER—See Instruments, Rubber and Felt Testing

TESTING INSTRUMENTS, STORAGE BATTERY—See Instruments, Battery Testing

TESTING MACHINES, SPRING—See Machines, Spring Testing

TESTING PLUGS, RADIATOR, FOR FORDS—See Plugs, Radiator Testing

TESTING TANKS—See Tanks, Inner Tube Testing

THERMOMETER LOCKS, RADIATOR—See Locks, Radiator Thermometer

THERMOMETERS, Aircraft

Foxboro Co., Neponset Ave., Foxboro, Mass.
National Gauge & Equipment Co., La Crosse, Wis. "Radi-Meter."

(See page 425.)

Radi-Meter—See National Gauge & Equipment Co.

Rieker Instrument Co., 1919-21 Fairmount Ave., Philadelphia, Pa.

THERMOMETERS, RADIATOR—See Meters, Water Temperature Indicating

THERMOMETERS, Vulcanizer

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Randall-Falchney Co., 76 Atherton St., Boston, Mass.

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 871.)

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

Weinhagen & Hospe, 159-65 Leonard St., New York, N. Y.

Wilson & Wilson (Waverly Sta.), Boston, Mass.

THERMOSTATIC CARBURETOR REGULATORS FOR FORDS—See Regulators, Thermostatic Carburetor

THERMOSTATS, Storage Battery

(Small thermostat to be attached to battery to indicate by means of colored lights the temperature of the battery)

Resco Products Co., Jamestown, N. Y. "Rescue."

Rescue—See Resco Products Co.

THERMOSTATS, WATER CIRCULATION REGULATING—See Regulators, Water Circulating

THIMBLES and FERRULES, Airplane Wire

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

Roebblings Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

THREAD CUTTING COMPOUNDS—See Lubricants, Cutting

THREAD, Top and Upholstery

American Thread Co., 269 W. Broadway, New York, N. Y.

Challenge—See Summit Thread Co.

Everything is listed under the NOUN or principal word



"I X L" Shortproof Timer for FORDS

No Exposed Wires.
No Exposed Terminals.
No Possibility of Short Circuits.
No Broken Connections or any Current Leakage.
Seamless Bakelite Case.

Replaceable Magnasite Bakelite Ring.
Flexible Metal Conduit.

Price of I X L Shortproof Timer complete with wires as illustrated, and also roller assembly—\$6.50.

DEALERS AND JOBBERS:—Write for details. Will be sold through regular channels only as rapidly as Jobbers' connections are established.

ECLIPSE SPECIALTY MANUFACTURING CO. 549 W. Washington Blvd. CHICAGO, ILL.



Meyer Auto Threads and Spool Silks, Tufting Twine and Ready Wound Bobbins

to fit any style machine can be had in any size or color that is wanted for hand as well as machine stitching. Be sure and order the Meyer threads and take no other. They have stood the test for the last fifteen years.

Manufactured by the

John C. Meyer Thread Works
LOWELL, MASS. Department FZY.

"Forged in Detroit"

A Message With a Meaning

If you have never used J B Forgings in your work a get-acquainted order will prove an answer to your forgings problems.

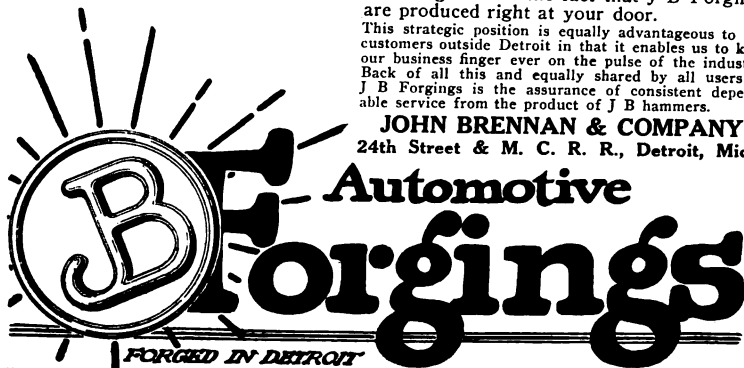
The full import of our message "Forged in Detroit" is best realized by considering just what it means to you, the individual automotive manufacturer.

If your plant is located in or near the great automotive center of America the obvious advantage lies in the fact that J B Forgings are produced right at your door.

This strategic position is equally advantageous to our customers outside Detroit in that it enables us to keep our business finger ever on the pulse of the industry. Back of all this and equally shared by all users of J B Forgings is the assurance of consistent dependable service from the product of J B hammers.

JOHN BRENNAN & COMPANY

24th Street & M. C. R. R., Detroit, Mich.



Please mention The Automobile Trade Directory

THREAD, Top and Upholstery (Continued)

Columbia—See Meyer Thread Works.
Crescent—See Meyer Thread Works.
F. M. C.—See French Thread Mills.
Fremo—See French Thread Mills.
French Thread Mills, Cutler St., Warren, R. I.
"F. M. C." "Fremo," "Speedway."
Hub—See Meyer Thread Works.
Japerica—See Seamans & Cobb Co.
Lockstitch—See Meyer Thread Works.
Meyer Thread Works, John C., Dept. FZY,
Lowell, Mass. "Hub," "Crescent," "Co-
lumbia," "Rugby," "Lockstitch."
(See page 947.)
Royal—See Summit Thread Co.
Rugby—See Meyer & Co.
Seaco—See Seamans & Cobb Co.
Seamans & Cobb Co., Boston, Mass.
"Seaco," "Japerica," (See page 514.)
Speedway—See French Thread Mills.
Summit Thread Co., Summit St., East Hamp-
ton, Conn. "Royal," "Challenge."
Ten Eick, Cornelius, 253 W. 47th St., New
York, N. Y. (Dealers) (See page 377.)

**THREAD, UPHOLSTERY—See Thread,
Top**

**THREADING TOOLS—See Tools, Thread-
ing**

**THROTTLE LEVER GRIPS—See Grips,
Spark and Throttle Lever**

**THROTTLE LEVER LOCKS FOR FORDS
—See Locks, Spark and Throttle Lever**

**THROTTLE ROD ANTI-RATTLERS FOR
FORDS—See Anti-Rattlers, Spark and
Throttle Rod**

**THROTTLE VALVES—See Valves, Steam
Throttle**

**THRUST BEARINGS FOR FORDS—See
Bearings, Drive Gear Ball and Roller
Thrust**

THUMB NUTS—See Nuts, Thumb

THUMB SCREWS—See Screws, Thumb

**TIGHTENERS, STUD BOLT—See Extract-
ors, Stud Bolt**

TIGHTENERS, Tire Chain

Dow & Cole, 1178 Elm St., Manchester, N. H.
"Spider."

Harp Mfg. Co., Galax, Va.

Hykon Mfg. Co., 153 E. State St., Alliance, O.
"Liberty."

Liberty—See Hykon Mfg. Co.

Merchant Corp., M. H., 238 Emma St.,
Syracuse, N. Y. (See page 721.)

Powers Mfg. Co., Waterloo, Iowa.
(See page 581.)

Schartow Mfg. Co. (So. Milwaukee), Milwau-
kee, Wis. "Sharto."

Sharto—See Schartow Mfg. Co.

Specialty Mfg. Co., Arlington, Mass. "Superior."

Spider—See Dow & Cole.

Superior—See Specialty Mfg. Co.

Trantum, F. W., 144 Allen St., Jamestown,
N. Y.

Wagner Mfg. Co., Cedar Rapids, Iowa.

**TIGHTENING COMPOUNDS—See Com-
pounds, Wood Wheel Tightening**

**TILTING BODIES—See Bodies, Special
Dumping**

**TILTING WHEEL ATTACHMENTS FOR
FORDS—See Attachments, Tilting Wheel**

TILTING WHEELS—See Wheels, Steering

**TIME CHECKS—See Checks, Brass, Time,
Tool and Pay**

**TIME RECORDERS—See Registers, Auto-
graphic and Manifold**

**TIME RECORDING CLOCKS—See Clocks,
Time Recording**

TIME STAMPS—See Stamps, Time

**TIMER BRUSHES FOR FORDS—See
Brushes, Timer**

**TIMER ELEVATING ATTACHMENTS FOR
FORDS—See Brackets, Timer Elevating**

**TIMER ELEVATING BRACKETS FOR
FORDS—See Brackets, Timer Elevating**

**TIMER GRINDERS FOR FORDS—See
Grinders, Timer**

**TIMER TERMINALS FOR FORDS—See
Terminals, Timer**

**TIMER WIRE GUARDS FOR FORDS—See
Guards, Timer Wire**

TIMERS, Ignition or Spark

(See also Systems, Battery Ignition)

Almy Water Tube Boiler Co., ft. Rhoades St.,
Providence, R. I.

Benford Auto Products, Inc., Mt. Vernon,
N. Y. "Monarch." (See page 945.)

Boicourt-Lopes Mfg. Co., San Antonio, Tex.

Capitol Tool & Die Works, 1100 Oakdale Ave.,
Chicago, Ill. "Star."

Connecticut Telephone & Electric Co., Meri-
den, Conn.

Cuno Engineering Corp., 80 S. Vine St., Meri-
den, Conn.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell,
Mass. "Heco."

Herz, 182 Locust Ave., New York, N. Y.

Inter-State Machine Products Co., 56 Allen St.,
Rochester, N. Y. "Leavitt," "Uncas."

Leavitt—See Inter-State Machine Co.

Lundgren Mfg. Co., Hale Bldg., Philadelphia,
Pa.

Milwaukee Auto Engine & Supply Co.,
Milwaukee, Wis. (See page 953.)

Modern Tool & Stamping Co., 111-17 S. Clin-
ton St., Chicago, Ill.

Everything is listed under the NOUN or principal word



J. & B. Original Timer for Ford Cars

This Timer has been found to wear longer—and therefore to sell better—because it is so designed that the oil reaches the vital spot which is the "Contact Roller."

Other Big J. & B. Sellers Include
Heavy Duty Timers, Right Hand Timers, Bushing Removers, Gasoline Injectors, Ford Switch Keys on Sell-Self Show Card, Replacement Coils for all cars, Valve Cage Remover for Valve-in-the-Head Engines.

*Every item a money maker for the live dealer
Send for our proposition at once*

J. & B. Manufacturing Co.
Pittsfield, Massachusetts

The BLUBLAZE TIMER FOR FORD CARS

Terminals are Sealed

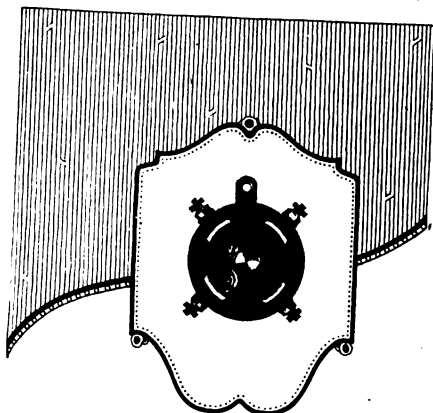
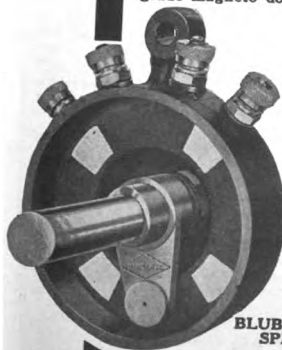
The only practical way to build a timer is of Condensite, same as all other automobile timers. The Condensite shall and Carbon Brush will do for the Ford what a magneto does for all other gas engines. Its principles and construction of Condensite is far superior to all other makes of Ford Timers, giving positive ignition and built to last indefinitely, same as a high grade magneto does.

Jobbers Dealers

A pleased and satisfied customer means repeat orders. Sell the Blublaze Timer and double your sales. Write for full particulars. Our proposition is good.

**BLUBLAZE MOTOR
SPECIALTIES
CORP.**

Price \$3 48-51 West 66th St.
New York, N. Y.



Wisconsin TIMER

Materials and design that have proven themselves the best under actual use coupled with skilled and accurate workmanship give the Wisconsin Timer its longer life of trouble-proof service.

Our sales policy provides a liberal margin of profit and the co-operation we extend to jobbers and dealers has built for us a reputation of fair dealing and good will.

Wisconsin Timers are packed in durable and attractive three color cartons. List price, \$2.00.

Manufactured by
WISCONSIN TIMER MFG. CORP.
Menomonee Falls, Wisconsin

Sales Representatives
J. WADSWORTH STAFF
122 S. Michigan Ave., Chicago, Ill.



Built Extra Good

Please mention The Automobile Trade Directory

TIMERS, Ignition or Spark (Continued)

Monarch—See Benford Mfg. Co.
 New York Coll Co., 328-40 Pearl St., New York, N. Y. "Rhoades."
 Rhoades—See New York Coll Co.
 Sints—See Wilmarth & Morman Co.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J.
 Star—See Capitol Tool & Die Works.
 Uncas—See Inter-State Machine Co.
 Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "Sints."

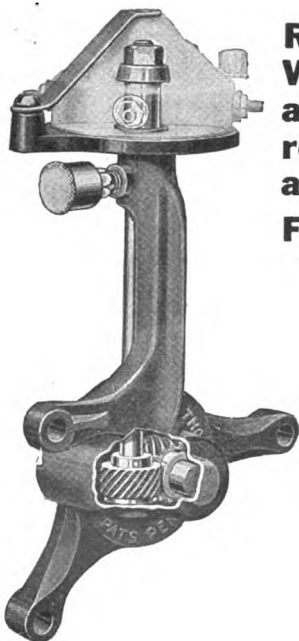
TIMERS, Ignition or Spark, for Fords

(See also Systems, Single Spark)

A. E.—See Chicago Automotive Engineering Corp.
 A-K—See Angsten-Kox Co.
 Accurate Machine Mfg. Co., 234 Fifth Ave., S., Minneapolis, Minn.
 Aero Mfg. Co., 9 S. Clinton St., Chicago, Ill. "Sure Shot."
 American Automobile Accessories, 1853 N. Tripp Ave., Chicago, Ill. "Shortless."
 Anco—See Anderson Co.
 Anderson Co., 232 St. Joseph St., South Bend, Ind. "Anco."
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "Anco." (See page 537.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Arrow Tool & Mfg. Co., 220 Channon St., Bridgeport, Conn.
 Auto Components, 56 E. Randolph St., Chicago, Ill. "Red Star."
 Automotive Specialty Sales Co., Dallas, Tex. "Parker."
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill.
 Bay State Pump Co., 500 E. First St. (S. Boston), Boston, Mass.
 Remus—See Motor Specialties Co.
 Benford Auto Products, Mt. Vernon, N. Y. "Monarch."
 Bestofall—See Jonas, C. N. & F. W.
 Blubase Motor Specialties Corp., 49-51 W. 86th St., New York, N. Y. (See page 949.)
 Blue Ribbon—See Ferro Mfg. Co.
 Cady—See Diemoulding Production Co.
 Chicago Automotive Engineering Corp., 334-35 N. Irving Ave., Chicago, Ill. "A. E."
 Connecticut Telephone & Electric Co., Meriden, Conn.
 Cook Sure-Fire Commutator Co.—See Southern Equipment Co.
 Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn.
 Cyclone—See Holland Brass Works.
 Dean—See Tisch Auto Supply Co.
 Diemoulding Production Co., Canastota, N. Y. "Cady."
 Duff Distributing Co., 2 Reector St., New York, N. Y. "Randall." (See page 717.)
 Dunham Co., Thos., Aurora, Ill. (See page 163.)
 Duntley, J. W., 1004 Michigan Ave., Chicago, Ill.
 Duplex Products Co., 3520 Princeton Ave., Chicago, Ill.
 Eclipse Specialty Mfg. Co., 549 W. Washington Blvd., Chicago, Ill. "IXL." (See page 947.)
 Economy Timer Co., Box AX, Norwalk, Conn. (See page 953.)
 Efemco—See Foster, Merriam & Co.
 Eustice Products Co., 4042 W. Jefferson St., Detroit, Mich.
 Fansteel—See Walsh, W. J.
 Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Blue Ribbon." (See page 407.)
 Ford Mfg. Co., Howard, Coldwater, Mich.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 806.)
 Gladiator Co., Auburn, Ind.
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 987.)
 Gould-Mersereau Co., 48 W. 38th St., New York, N. Y.
 Herz, 182 Locust Ave., New York, N. Y.
 Holland Brass Works, 616-18 W. Monroe St., Chicago, Ill. "Cyclone."
 Holmes Special Tool Co., 38 Canal St., New Haven, Conn. "Pourier."
 Howe Lamp & Mfg. Co., 115-23 E. Ontario St., Chicago, Ill.
 I. I.—See Improved Ignition Co.
 IXL—See Eclipse Specialties Mfg. Co.
 Improved Ignition, Inc., 200 Cannon St., Bridgeport, Conn. "I. I." (See page 953.)
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.
 J. & B. Mfg. Co., Pittsfield, Mass. (See page 949.)
 J. P. Specialty, 63 W. Jackson Blvd., Chicago, Ill. "Pep."
 Jambor Mfg. Co., Milwaukee, Wis. (See page 893.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales representative for Mechanical Production Co., M. & M. Bldg., Milwaukee, Wis.) (See page 346A.)
 K-L—See M-R Mfg. Co.
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Kant Short Timer Co., 211 Park St., New Haven, Conn.
 L. & L.—See Libby Auto Accessories, Inc.
 Lee—See Never Break Products Co.
 Libby Auto Accessories, Inc., Guaranty Trust Bldg., New York, N. Y. "L. & L."
 Life—See Jonas, C. N. & F. W.
 McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 471.)
 M-R Mfg. Co., 2377 O St., Lincoln, Nebr. "K-L."
 Master—See Reildville Mfg. Co.
 Mechanical Production Co.—See Jonas, C. N. & F. W.
 Melkle Mfg. Co., Springfield, Ill. "Springfield."
 Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 573.)
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never-Miss."
 Mill City Co., Minneapolis, Minn.
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 955.)
 Monarch—See Benford Auto Products.
 Motor Specialties Co., Waltham, Mass. "Remus."
 Necedah Mfg. Co., Necedah, Wis. "Bestofall." (See page 933.)
 Nelson Timer Corp., 711 Chestnut St., Milwaukee, Wis.
 Never Break Products Co., Bangor, Pa. "Lee." (See page 311.)
 Never-Miss—See Mil-Mac Mfg. Co.
 Parker—See Automotive Specialty Sales Co.
 Pep—See J. P. Specialty Co.
 Pourier—See Holmes Special Tool Co.
 Randall—See Duff Distributing Co.
 Recto Mfg. Co., 23 W. Third St., Cincinnati, O.
 Red Line, Inc., Grand Rapids, Mich. (See page 607.)

Everything is listed under the NOUN or principal word

THOMAS TIMER ELEVATOR FOR FORD CARS and TRUCKS

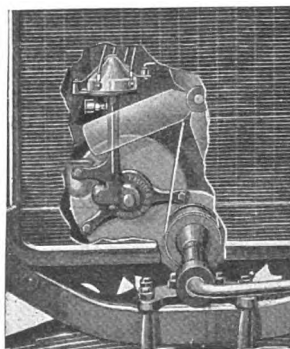


**Raises the Timer and
Wiring up out of the dirt
and grease thereby cor-
recting Ignition Troubles
arising from the Timer.**

Fits any Ford Timer.

**Can be
Installed
In 20
minutes
without
removing
radiator**

No Holes to Drill



**SHOWING ELEVATOR
INSTALLED ON FORD**

LIST PRICE, \$6.50

THOMAS PRODUCTS ARE SOLD THROUGH JOBBERS

**Order From Your Jobber
TODAY**

THOMAS-ANDREWS CORPORATION

**DEPARTMENT OF SALES, 624 SOUTH MICHIGAN AVENUE, CHICAGO
FACTORY, WAUKEGAN, ILL.**

Please mention The Automobile Trade Directory

TIMERS, Ignition or Spark, for Fords
(Continued)

- Red Star—See Auto Components.
 Reidville Mfg. Co., Waterbury, Conn. "Master."
 Riblet Mfg. Co., 502 Maxwell Bldg., Long Beach, Cal. "Rimco." (See page 1007.)
 Rimco—See Riblet Mfg. Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich.
 Schofield Mfg. Co., Cleveland, O.
 Service Mfg. Co., 211-13 Centre St., New York, N. Y.
 Shortless—See American Automobile Accessories
 Signalite Mfg. Co., 522 S. Clinton St., Chicago, Ill. "Signo."
 Signo—See Signalite Mfg. Co.
 Southern Equipment Co., 26 Court St., Brooklyn, N. Y. (Sole Distributors for Cook Sure Fire Commutator Co., Brooklyn, N. Y.)
 Springfield—See Melkie Mfg. Co.
 Sure Shot—See Aero Mfg. Co.
 Thomas-Andrews Corp., Waukegan, Ill. (See page 951.)
 Tisch Auto Supply Co., 522 Turner Ave., Grand Rapids, Mich. "Dean."
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
 Visible Commutator & Specialties Co., Highlands, N. J.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y. (See page 388.)
 Walker Accessories, 1991 Broadway, New York, N. Y.
 Walsh, W. J., 215 N. Michigan Ave., Chicago, Ill. "Fansteel."
 Wayne Engineering Co., 1400 Broadway, New York, N. Y.
 Winters Co., Leonard R., 5315 N. Second St., Philadelphia, Pa.
 Wisconsin Timer Mfg. Corp., Menomonee Falls, Wis. (See page 949.)
 Zenite Metal Co., 203 N. West St., Indianapolis, Ind. (See page 901.)

TIMERS, Motor Boat

- Bemus—See Motor Specialties Co.
 Herz, 182 Locust Ave., New York, N. Y.
 King Bros., 439 E. Water St., Syracuse, N. Y.
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 953.)
 Motor Specialties Co., Waltham, Mass. "Bemus."

TIMERS, Tractor

- McCulloch Mfg. Co., 216 High St., Boston, Mass. (See page 471.)
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 953.)
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.

TIPPERS, OIL CAN AND BARREL—See Holders or Tipplers, Oil Can and Barrel

TIPS, BURNER—See Burners, Acetylene

TIRE ALARMS—See Alarms, Tire

TIRE BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

TIRE BANDS—See Bands, Non-Skid Truck

TIRE BOLTS—See Bolts, Stove

TIRE BUFFERS—See Machines, Electric Tire Buffing

TIRE BUFFING MACHINES, ELECTRIC—See Machines, Electric Tire Buffing

TIRE BUILDING STANDS—See Stands, Tire Building

TIRE CARRIERS—See Holders, Tire

TIRE CASES—See Covers, Spare Tire

TIRE CEMENT—See Cement, Tire Repair

TIRE CHAIN ADJUSTERS—See Tighteners, Tire Chain

TIRE CHAIN FASTENERS—See Fasteners, Tire Chain

TIRE CHAIN LOCKS—See Locks, Tire Chain

TIRE CHAIN REPAIR LINKS—See Links, Tire Chain Repair

TIRE CHAIN SPRINGS—See Tighteners, Tire Chain

TIRE CHAIN TIGHTENERS—See Tighteners, Tire Chain

TIRE CHAIN TOOLS—See Tools, Tire Chain Repair

TIRE CHAINS—See Chains or Grips, Non-Skid

TIRE CHANGERS—See Machines, Tire Removing and Replacing

TIRE CORES—See Molds, Tire Vulcanizing

TIRE COVERS—See Covers, Spare Tire

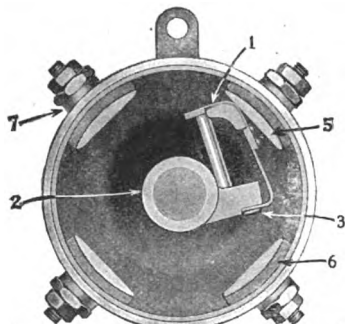
TIRE CURING BAGS—See Bags, Steam Tire Curing

TIRE DEFLATING TOOLS—See Tools, Tire Deflating

Everything is listed under the NOUN or principal word

Economy Timers FOR FORD CARS

Require no oil—Will not short circuit



Wearing parts fully replaceable.

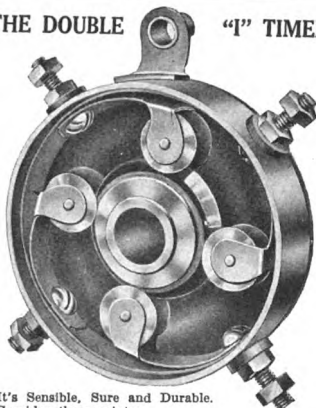
A positive wiping contact.

Make starting easy

Sold only on a money-back GUARANTEE

ECONOMY TIMER CO.
Box AX NORWALK, CONN.

THE DOUBLE "I" TIMER



It's Sensible, Sure and Durable.

Consider these points:

A V-rim rotor that is always giving a perfect rolling and wiping contact.

Brass to brass there is nothing better for contacts. Wear that is negligible; that is only a lapping of contact surfaces to a smooth finish.

No Roller troubles. Rollers roll on a small center rather than the outside rim at a speed of 3-5 that of the ordinary timer.

Slower contacting speed that means a better contact. No lubricating troubles. Just fill with grease. The V-rim rotor cuts and wipes for a perfect spark.

List\$3.00

IMPROVED IGNITION, INC.

200 Cannon St.

Bridgeport, Conn.



Brush Assembly of the Milwaukee is guaranteed to outwear any other made.



A Tip to Dealers

-from an Expert on Fords

"If I were selling timers for Fords, I'd get rid of all the 'freak,' fancy-design timers that aren't built to stand the gaff. I'd take this Milwaukee Timer and recommend it to the limit. Compare it with any other timer you know and you'll see why it outsells all other makes.

"You can see the Milwaukee is made better—the same simple standard design that is used on 3,000,000 Fords—only two moving parts. It sells for \$2.10 and it's sure worth it. Ask your jobber for it." (\$2.25 west of Rocky Mountains.)

Milwaukee Auto Engine & Supply Co.
Milwaukee, Wisconsin

MILWAUKEE TIMER for FORDS

Please mention The Automobile Trade Directory

- TIRE FABRICS—See Fabric, Cotton Tire
 TIRE FILLERS—See Compounds, Tire Filling
 TIRE FILLING COMPOUNDS—See Compounds, Tire Filling
 TIRE GAGES—See Gages, Tire
 TIRE HOLDERS—See Holders, Tire
 TIRE INFLATERS—See Pumps; also Tanks
 TIRE INFLATING TANKS—See Tanks, Tire Inflating
 TIRE INSPECTING MACHINES—See Machines, Tire Inspecting
 TIRE IRONS—See Tools, Tire
 TIRE KITS—See Kits, Tire Repair
 TIRE KNIVES—See Knives, Tire Repair
 TIRE LOCKS—See Locks, Spare Tire
 TIRE MASTICS—See Compounds, Tire Repair
 TIRE MICA—See Talc, Tire
 TIRE MOLDS—See Molds, Tire Vulcanizing
 TIRE PAINTS—See Paints, Rubber
 TIRE PATCHES—See Patches, Tire
 TIRE PLASTICS—See Compounds, Tire Repair
 TIRE PLUGS—See Plugs, Tire
 TIRE POWDER—See Talc, Tire
 TIRE PRESERVING COMPOUNDS—See Compounds, Tire Preserving
 TIRE PRESSES—See Presses, Tire
 TIRE PRESSURE GAGES—See Gages, Tire Pressure
 TIRE PROTECTORS—See Treads, Tire
 TIRE PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection
 TIRE PUMP CONNECTIONS—See Connections, Tire
 TIRE PUMPS—See Pumps
 TIRE PUTTY—See Compounds, Tire Repair
 TIRE RACKS—See Racks, Metal Tool, Stock and Tire
 TIRE REMOVING MACHINES—See Machines, Tire Removing and Replacing
 TIRE REPAIR CEMENT—See Cement, Tire Repair
 TIRE REPAIR COMPOUNDS—See Compounds, Tire Repair
 TIRE REPAIR KITS—See Kits, Tire Repair
 TIRE REPAIR KNIVES—See Knives, Tire Repair
 TIRE REPLACING MACHINES—See Machines, Tire Removing and Replacing
 TIRE RETAINERS—See Fillers, Tire Bead
 TIRE SAVING JACKS—See Jacks, Tire Saving
 TIRE SKIVING MACHINES—See Machines, Tire Skiving
 TIRE SLEEVES—See Sleeves, Tire
 TIRE SPREADERS—See Tools, Tire
 TIRE STITCHERS—See Machines, Double Tread Tire Stitching
 TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching
 TIRE STRAPS—See Straps, Leather
 TIRE TALC—See Talc, Tire
 TIRE TANKS—See Tanks, Tire Inflating
 TIRE TAPE—See Tape, Insulating and Tire
 TIRE TOOLS—See Tools, Tire; also Tools, Tire Valve Rethreading
 TIRE TREAD PEELING TOOLS—See Tools, Tire Tread Rolling and Peeling
 TIRE TREAD ROLLING TOOLS—See Tools, Tire Tread Rolling & Peeling
 TIRE TREADS—See Treads, Tire
 TIRE VALVE DUST CAPS—See Caps, Tire Valve Dust
 TIRE VALVE REMOVERS—See Machines, Tube Deflating and Valve Removing
 TIRE VALVE TOOLS—See Tools, Tire Valve Rethreading
 TIRE VALVES—See Valves, Tire
 TIRE VULCANIZERS—See Vulcanizers
 TIRE VULCANIZING TOOLS—See Tools, Tire Vulcanizing

Everything is listed under the NOUN or principal word



**Shoulders of Strength,
Cleated Tread—two
exclusive Ajax features**

THE faithfulness with which Ajax Tires are built is as big an asset for the dealer as for the user. For the dealer it is reflected in steady always-growing demand, and in large percentage of repeat sales. It is an established fact that Ajax users seldom change.

Ajax does business with the dealer on a basis which we believe meets favor everywhere. Those thousands of dealers who know our methods need no explanation. Good dealers who so far have not handled Ajax Tires, are invited to write for full details of the Ajax Dealers Sales and Service Franchise.

You owe it to your business to investigate the Ajax opportunity. Write the home office or the nearest Ajax branch.

**AJAX RUBBER COMPANY, Inc.
NEW YORK**

Factories: Trenton, N. J.

Branches in Leading Cities

AJAX TIRES

Please mention The Automobile Trade Directory

TIRE WRAPPING MACHINES—See Machines, Tire Bandage

TIRES, Airplane

Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 (See page 963.)
 United States Tire Co., 1790 Broadway, New York, N. Y. "Usco."
 Usco—See United States Tire Co.

TIRES, CUSHION—See Tires, Special

TIRES, Motorcycle

Continental Rubber Works, 190 Liberty St., Erie, Pa. "Vitalic."
 Firestone Tire & Rubber Co., Miller & Switzer Ave., Akron, O.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 (See page 963.)
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Savage Tire Co., Main & Seward Sts., San Diego, Cal.
 Traxion—See United States Tire Co.
 Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Traxion," "Usco."
 Usco—See United States Tire Co.
 Vitalic—See Continental Rubber Works.

TIRES, Pneumatic

(See also Tubes, Inner)

Achilles Rubber & Tire Co., Binghamton, N. Y.
 Aome Rubber Mfg. Co., Trenton, N. J.
 Advance Rubber Co., 21-39 Gardner Ave., Brooklyn, N. Y. "Top Notch."
 Alex Rubber Co., New York, N. Y. "Road King." (See page 955.)
 Akron Tire & Rubber Co., 24-26 Columbus Ave., Boston, Mass. (Dealers.) (See page 965.)
 Allen Tire & Rubber Co., 510 Hamilton St., Allentown, Pa.
 Allsteel Ridewell Tire & Rubber Co., Lindsey Bldg., Dayton, O. "Artyr."
 Amazon Rubber Co., Akron, O.
 American—See Mansfield Tire & Rubber Co.
 American Rubber & Tire Co., 100 Beach St., Akron, O.
 Anchor—See New Jersey Car Spring & Rubber Co.
 Angola Tire & Rubber Co., N. Division & Pine Sts., Buffalo, N. Y.
 Apollo Tire & Rubber Co., 3962 E. 93rd St., Cleveland, O.
 Arabian—See Defiance Tire Factoria.
 Archer Cord Tire & Rubber Co., 711-17 15th Ave., N. E., Minneapolis, Minn.
 Ardmore Akron Tire & Rubber Co., Herskowitz Bldg., Oklahoma City, Okla.
 Armstrong Rubber Co., 123-43 Monroe St., Garfield, N. J.
 Artyr—See Allsteel Ridewell Tire & Rubber Co.
 Auburn—See Double Fabric Tire Co.
 Ashland Tire & Rubber Co., Clark Ave. & E. Eighth St., Ashland, O. "Stalwart."
 Auto Tire Sales Co., 1246-48 Michigan Ave., Chicago, Ill. "Lyon." (See page 137.)
 Batavia Rubber Co., Batavia, N. Y. "Merlin."
 Beacon Tire Co., Main & River Sts., Beacon, N. Y.
 Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.
 Biltwell Tire & Rubber Co., Akron, O. "Hard-Wear."
 Black Hawk Tire & Rubber Co., Des Moines, Iowa.
 Blekre Tire & Rubber Co., St. Paul, Minn. (See page 967.)
 Bowers Rubber Works, 63-70 Sacramento St., San Francisco, Cal.
 Bowling Green Rubber Co., 1203 Prospect Ave., Toledo, O.
 Braender Rubber & Tire Co., Rutherford, N. J. "Bull Dog." (See page 963.)
 Britton Mfg. Co., 14th & Farnam Sts., Omaha, Neb.
 Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.
 Buckskin—See Tuscan Tire & Rubber Co.
 Bucyrus—See Henderson Tire & Rubber Co.
 Bull Dog—See Braender Rubber & Tire Co.
 Burdick Tire & Rubber Co., Noblesville, Ind.
 Butler Bros., 426 W. Randolph St., Chicago, Ill. "Sheridan."
 Canton-Blackstone Co., Canton, O. "Knight."
 Capitol—See National Tire & Rubber Co.
 Carlisle Tire Corp., Fairfield Ave., Stamford, Conn.
 Carspring—See New Jersey Car Spring & Rubber Co.
 Century-Plainfield Tire Co., Plainfield, N. J.
 Century Rubber Works, 1246 Kawsom St., Chicago, Ill.
 Champion—See McLean Tire & Rubber Co.
 Channon Co., H. 150 N. Market St., Chicago, Ill. "Gripwell."
 Cleveland—See Standard Tire Co.
 Climax—See Zee Rubber Co.
 Clingstone—See Lancaster Tire & Rubber Co.
 Coast Tire & Rubber Co., 48th Ave. & 12th St., Oakland, Cal.
 Columbia Tire & Rubber Co., Elm & Railroad Sts., Columbiana, O. "Para-Bell."
 Columbus Tire & Rubber Co., 555 W. Goodale St., Columbus, O.
 Combination Rubber Mfg. Co., Bloomfield, N. J. "Viking."
 Conestoga Tire & Rubber Co., 46 N. Prince St., Lancaster, Pa.
 Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."
 Converse Rubber Shoe Co., Malden, Mass. "Tuff-E-Nuff."
 Cord Tire Corp., Chester, W. Va. "Superior."
 Corduroy—See Grand Rapids Tire & Rubber Corp.
 Cornhusker—See Nebraska Tire & Rubber Co.
 Corona Cord Tire Co. (E. Butler), Butler, Pa. "Coronada."
 Coronada—See Corona Cord Tire Co.
 Cortland Tire & Rubber Co., 243 Cortland St., Belleville, N. J.
 Crown Tire & Rubber Co., Ralston, Neb.
 Cumberland Tire & Rubber Co., 26th & Courtney Sts., Louisville, Ky.
 Cunningham & Berrien, 23 W. 43rd St., New York, N. Y. (Eastern Distributors for "Perfection" Tires) (See page 927.)
 Cupples Co., Seventh & Spruce Sts., St. Louis, Mo.
 Curtis Tire & Rubber Co., Rochester, N. Y.
 Dayton Pneumatic Tool Co., Hartford St. & Big Four R. R., Dayton, O. "Green."

Everything is listed under the NOUN or principal word

Victor

FABRIC AND CORD TIRES



Victor, is a Quality line of tires and tubes at a popular price.

Dealers can back up the Victor line with 100% confidence, knowing that it will stand up against any competition, regardless of price or quality.

The Victor line means more profit to the dealer. It is an exclusive sales proposition.

The Victor line consists of over-size cord and fabric casings, red and gray tubes and an over-size cord special tube.

We educate dealers' salesmen, show them how and why Victor Tires are superior and train them how to present these arguments to your trade.

Dealers:—The Victor proposition is for One Dealer in each town. Write Today.

The Victor Rubber Co.

SPRINGFIELD, OHIO

*Builders of Rubber Tires
for over 21 years.*

Factory { *Chicago, 1720 S. Michigan Ave.*
Branches: { *New York, 1991 Broadway.*

MILEAGE

VICTORS

Please mention The Automobile Trade Directory

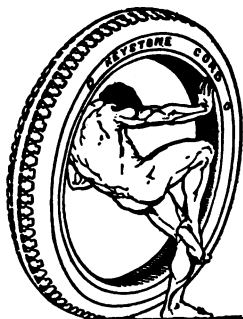
TIRES, Pneumatic (Continued)

- Dayton Rubber Mfg. Co., W. River St., Dayton, O.
- De Luxe—See Goodrich Co.
- Defiance Tire Factories, 426 Randolph St., Chicago, Ill. "Arabian."
- Dellon Tire & Rubber Co., Baltimore, Md. (See page 983.)
- Denman-Myers Cord Tire Co., Cleveland, O.
- Diamond Rubber Co., Akron, O.
- Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.
- Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Auburn."
- Doughty Tire Co., 115 Wickenden St., Providence, R. I.
- Dowse Rubber Co., 122 S. Michigan Ave., Chicago, Ill.
- Doyle Tire & Rubber Co., Akron, O.
- Dry Climate Tire Mfg. Co., Arvada, Colo. "Victory."
- Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.
- Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y.
- Eagle Puncture Proof Tire Co., 1662 Broadway, New York, N. Y.
- Eagle Rubber Co., Bloomfield, N. J.
- Eclipse Cord Tire Corp., Columbus, O.
- Ehman Tire & Rubber Co., 176 N. Michigan Ave., Chicago, Ill.
- Empire Rubber & Tire Co., Lulberry St. & Clinton Ave., Trenton, N. J.
- Erle Tire & Rubber Co., First St., Sandusky, O.
- Excel Rubber Co., 116 Broad St., Wadsworth, O. "X-L."
- Falls Rubber Co., Cuyahoga Falls, O.
- Federal Rubber Co. (Cudahy), Milwaukee, Wis.
- Fidelity Tire & Rubber Co., Massillon, O.
- Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
- First National Tire & Reliner Co., 55 Compau Ave., N. W., Grand Rapids, Mich. "Jaxon." (See page 665.)
- Fisk Rubber Co. of New York, Chicopee Falls, Mass. (See page 969.)
- Formost—See United Motors Service.
- Forster Tire & Rubber Co., Millersburg, O.
- Fort Wayne Tire & Rubber Mfg. Co., People's Trust Bldg., Fort Wayne, Ind. "Wayne."
- G & J Tire Co., 1790 Broadway, New York, N. Y.
- General Tire & Rubber Co., E. Market St., Akron, O. "Jumbo."
- General Tire & Rubber Co., 320 N. 15th St., Philadelphia, Pa.
- Georgia Tire & Rubber Co., Atlanta, Ga.
- Gillette Rubber Co., Eau Claire, Wis.
- Glamorgan Tire & Rubber Corp., 72 E. Spring St., Columbus, O.
- Globe Rubber Tire Mfg. Co., 1851 Broadway, New York, N. Y.
- Goodrich Co., E. F., S. Main St., Akron O. "Silvertown," "De Luxe."
- Goodyear Tire & Rubber Co., Akron, O. (See page 963.)
- Gordon Tire & Rubber Co., 1200 Seventh St., S. W., Canton, O. "H. B. McMasters."
- Grand Rapids Tire & Rubber Corp., Pearl & Ottawa Sts., Grand Rapids, Mich. "Corduroy."
- Great Republic Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla.
- Green—See Dayton Pneumatic Tool Co.
- Greyhound—See Ideal Tire & Rubber Co.
- Gripwell—See Channon Co.
- Grow Tire Co., 323 Columbus Ave., Boston, Mass.
- H. B. McMasters—See Gordon Tire & Rubber Co.
- Hanes Rubber Co., Winston-Salem, N. C.
- Hard-Wear—See Biltwell Tire & Rubber Co.
- Hardman Rubber Corp., New Brunswick, N. J. "Sure-Grip."
- Hartford Rubber Works Co., 1792 Broadway, New York, N. Y.
- Hawkeys Tire & Rubber Co., 215 E. Third St., Des Moines, Ia. "Santa Fe."
- Haywood—See Zee Zee Rubber Co.
- Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Bucyrus."
- Hester Tire & Rubber Co., 6306 Euclid Ave., Cleveland, O.
- Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
- Highway—See National Tire & Rubber Co.
- Holyoke—See New England Tire & Rubber Co.
- Hood Rubber Products Co., Watertown, Mass.
- Horseshoe—See Racine Auto Tire Co.
- Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.
- Hubbell Tire & Rubber Co., 6545 Carnegie Ave., Cleveland, O.
- Huskie—See United Rubber Co.
- Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."
- Illinois Tire Co., First Nat'l Bank Bldg., Chicago, Ill.
- India Tire & Rubber Co., Akron, O.
- Inland Rubber Co., 146 W. 27th St., Chicago, Ill.
- Interlocking Cord Tire Co., Everett Bldg., Akron, O.
- International India Rubber Corp., Ewing Ave. & Vandalla R. R., South Bend, Ind. "South Bend."
- Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
- J. & D.—See McClaren Rubber Co.
- Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.
- Jaxon—See First National Tire & Reliner Co.
- Johnstone Tire & Rubber Co., La Porte, Ind.
- Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill. (Dealers.) (See page 943.)
- Jumbo—See General Tire & Rubber Co.
- Keaton Tire & Rubber Co., 1337 S. Flower St., Los Angeles, Cal.
- KelBro—See Kelley Tire Co.
- Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."
- Kelley Tire & Rubber Co., West Haven, Conn.
- Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.
- Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y. (See page 503.)
- Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
- Keystone Tire & Rubber Co., Keystone Bldg., Broadway & 62nd St., New York, N. Y. (See page 959.)
- Knight—See Canton-Blackstone Co.
- Knox Tire & Rubber Co., Mt. Vernon, O.
- Kokomo Rubber Co., 1042 S. Main St., Kokomo, Ind.
- Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingstone," "Wiregrip."
- Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
- Lehigh Tire & Rubber Co., Newcastle, Pa.
- Liberty Tire & Rubber Co., Green Bay, Wis.
- Lincoln Highway Tire Co., Fulton, Ill.

Everything is listed under the NOUN or principal word

Increased Profits and Greater Number of Satisfied Customers

Are Assured to Dealers Selling



Keystone Cords

*8,000 MILES of Service
Guaranteed In Writing*

KEYSTONE TIRE & RUBBER CO.
KEYSTONE BLDG., BROADWAY AND 62nd ST., NEW YORK

1921 Will Be a Keystone Year

Please mention The Automobile Trade Directory

TIRES, Pneumatic (Continued)

- Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind.
- Ludington Rubber Co., Trust Co. Bldg., Ludington, Mich.
- Lyon—See Auto Tire Sales Co.
- McClaren Rubber Co., W. Palmer St., Charlotta, N. C. "J. & D."
- McClurg—See Midland Tire & Rubber Co.
- McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.
- McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.
- McLean Tire & Rubber Co., East Liverpool, O. "Champion."
- Madison Tire & Rubber Co., 20 W. 60th St., New York, N. Y. (See page 961.)
- Majestic Tire & Rubber Co., Cruse & Daly Sts., Indianapolis, Ind.
- Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 965.)
- Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa. (See page 1005.)
- Manhattan Tire & Rubber Co., Mansfield, O.
- Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "Ohio," "United," "American."
- Marathon Tire & Rubber Co., Cuyahoga Falls, O.
- Marion Tire & Rubber Co., George & Grand Sts., Marion, O.
- Martin Jas., 130-34 W. 52nd St., New York, N. Y. (Dealers.) (See page 637.)
- Martin Tire Corp., New Haven, Conn.
- Mason Tire & Rubber Co., 303 Lake St., Kent, O.
- Master Tire & Rubber Co., Leo St. & B. & O. R. R., Dayton, O.
- Merlin—See Batavia Rubber Co.
- Meyer Rubber Co., Columbiana, O.
- Michelin Tire Co., Milltown, N. J.
- Midco—See Zenith Tire & Rubber Co.
- Mid-Continental Tire Mfg. Co., Wichita, Kans. "Midco."
- Midco—See Mid-Continental Tire Mfg. Co.
- Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.
- Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "McClurg."
- Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
- Miller Rubber Co., Akron, O.
- Mohawk Rubber Co., E. Market St., Akron, O.
- Monarch—See Williams Tire Co.
- Monarch Rubber Co., Hartsville, O.
- Montford Rubber Co., 854 Main St., Buffalo, N. Y. "Wayne."
- Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
- Na-Peer Tire Co., Akron, O.
- Nassau—See Thermold Rubber Co.
- National Rubber Products Corp., Tenth St. & Columbia Ave., Philadelphia, Pa. "Speedway."
- National Tire Co., Broad St. Bank Bldg., Trenton, N. J.
- National Tire & Rubber Co., East Palestine, O. "Capitol," "Highway," "Olympian," "Roamer," "Record."
- Nebraska Tire & Rubber Co., 3167-77 Spaulding St., Omaha, Nebr. "Cornhusker."
- Needham Tire Co., Charles River, Mass.
- New England Tire & Rubber Co., 285 High St., Holyoke, Mass. "Holyoke."
- New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Car-spring," "Anchor."
- Nobby—See United States Tire Co.
- Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.
- Ohio—See Mansfield Tire & Rubber Co.
- Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. (Distributors.) (See page 961.)
- Oldfield Tire Co., Akron, O.
- Olympian—See National Tire & Rubber Co.
- Orrville Rubber Co., Orrville, O.
- Overland Tire & Rubber Co., 30th & Taylor Sts., Omaha, Nebr.
- Para-Bell—See Columbia Tire & Rubber Co.
- Paramold—See Pharis Tire & Rubber Co.
- Parker Tire & Rubber Co., 2641 Allan Ave., Indianapolis, Ind.
- Pennsylvania Rubber Co. of America, Jeanette, Pa.
- Perfection Tire & Rubber Co., Fort Madison, Ia.
- Pharis Tire & Rubber Co., Newark, O. "Paramold," (See page 961.)
- Portage Rubber Co., Barborton, O.
- Portage Tire & Rubber Co., Akron, O. "Skidlock."
- Powertown Tire Corp., 355 Main St., Buffalo, N. Y.
- Prudential Tire & Rubber Co., 8 S. Dearborn St., Chicago, Ill.
- Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
- Quality Tire & Rubber Co., 24th & Walton Sts., Anderson, Ind. "Long-Wear."
- R & C—See Roussey-Centlivre Rubber Co.
- Racine Auto Tire Co., 1215 State St., Racine, Wis. "Horseshoe."
- Racine Rubber Co., Asylum Ave., Racine, Wis.
- Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.
- Record—See National Tire & Rubber Co.
- Republic Rubber Co., Albert St., Youngstown, Ohio.
- Reserve—See Western Reserve Tire Corp.
- Revere Rubber Co., 1780 Broadway, New York, N. Y.
- Road King—See Ajax Rubber Co.
- Roamer—See National Tire & Rubber Co.
- Rotary Tire & Rubber Co., Zanesville, O. "Rovar."
- Roussey-Centlivre Rubber Co., 129 E. Main St., Fort Wayne, Ind. "R & C."
- Rovar—See Rotary Tire & Rubber Co.
- Rubber Co. of America, Hartford Bldg., Chicago, Ill. (Sole Distributors for Wilson Tire & Rubber Co., Springfield, Ill.)
- Rubber Products Co., Barborton, O. "Stronghold."
- Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.
- Santa Fe—See Hawkeye Tire & Rubber Co.
- Savage—See Spreckels-Savage Tire Co.
- Sheridan—See Butler Bros.
- Sherman-Stieverson Tire & Rubber Co., Elka Bldg., Scottsdale, Pa.
- Silvertown—See Goodrich Co.
- Sloux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sloux City, Ia.
- Skidlock—See Portage Tire & Rubber Co.
- Slohm Tire & Mould Co., 247 Delaware Ave., Buffalo, N. Y.
- Smith Rubber & Tire Co., Garfield, N. J.
- Sound—See Western Rubber Co.
- South Bend—See International India Rubber Corp.
- Southern Tire & Rubber Co., 150 Nassau St., New York, N. Y.
- Speedway—See National Rubber Products Corp.

Everything is listed under the NOUN or principal word

Special Announcement

We have succeeded in obtaining a factory in which we will build our own tire in both FABRIC and CORD of a quality to equal any now on the market.

Pending the completion of our own NEW EQUIPMENT we are temporarily distributing

TUSCAN TIRES

FABRIC HAND BUILT CORD
6000 miles 8000 miles

Exceptional Sales Offer for Distributors

Our policy of territorial PROTECTION, PRICES and DISCOUNTS will mean BIG PROFITS for you.

WRITE OR WIRE

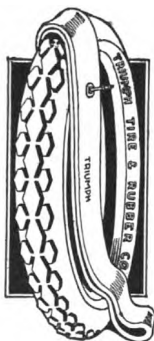
Some valuable territory is still open

The Ohio Guaranty Tire and Rubber Co.

5510 Euclid Avenue

Cleveland, Ohio

TRIUMPH TIRES



Built as well as science, skill and experience can produce. The lowest-cost-per-mile tires known—guaranteed

6000 Miles

and Invariably Delivering More

Triumph Tire & Rubber Co.

Manley, Mount & Nelson Sts. Long Island City, N. Y.

Madison Tires

SUPERB ENDURANCE



**Cord
or
Fabric**

**Madison Tire
and Rubber
Company, Inc.**

20 W. 60th St.,
New York City

Chicago,
1606 Michigan Ave.

Boston,
859 Boylston St.

Atlanta,
303-5 Peachtree St.

Export Dept.:
20 W. 60th St., N. Y.

Cable: "Madtire"

Factories:
Buffalo, N. Y.

OUR TIRES

MADE and SOLD



represent an investment by the public of

**MILLIONS
in
THOUSANDS
of
TIRES**

This shows the
**UNIVERSAL
APPRECIATION**
of

OUR TIRE
and it should convince you of its
**SUPREME
MERIT.**

The sale of one of
our tires to your
customer compels
his permanent patronage.

Write for Dealers' Proposition.
Your Opportunity for Sales and Profit.

The Pharis Tire & Rubber Co.
Newark, Ohio

Please mention The Automobile Trade Directory

TIRES, Pneumatic (Continued)

Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.
 Spreckels-Savage Tire Co., Main & Sicord Sts., San Diego, Cal. "Savage."
 Stalwart—See Ashland Tire & Rubber Co.
 Standard Four Tire Co., Keokuk, Ia.
 Standard Tire Co., Willoughby, O. "Tiger-foot."
 Star Rubber Co., 1072 Crozier St., Akron, O.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Sterling Tire Corp., Rutherford, N. J.
 Stronghold—See Rubber Products Co.
 Sturdy Tire & Rubber Co., 17-35 Perrine Ave., Trenton, N. J.
 Sturges Tire & Rubber Co., Oakland, Cal. "V. K."
 Superior—See Cord Tire Corp.
 Supershod—See Surety Tire & Rubber Co.
 Super Tread Tire Co., Cedar & Emerick Sts., South Bend, Ind.
 Sure Grip—See Hardman Rubber Corp.
 Surety Tire & Rubber Co., St. Louis, Mo. "Supershod." (See page 965.)
 Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
 Syra-Cord—See Syracuse Rubber Co.
 Syracuse Rubber Co., Syracuse, N. Y. "Syra-Cord."
 Thermoid Rubber Co., Trenton, N. J. "Nasman." (See page 551.)
 Tigerfoot—See Standard Tire Co.
 Tollivar Tube & Tire Co., 3100 Downing St., Denver, Colo.
 Top Notch—See Advance Rubber Co.
 Traveler Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Bethlehem, Pa.
 Tred-Wel—See Twin Tube & Rubber Co.
 Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J.
 Triumph Tire & Rubber Co., Manley, Mount & Nelson Sts., Long Island City, N. Y. (Dealers.) (See page 961.)
 Tubeless Tire & Rubber Co., Millersburg, O.
 Tuff-E-Nuff—See Converse Rubber Shoe Co.
 Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."
 Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Tred-Wel."
 Tyler Rubber Co., Andover, Mass. "Tyrian."
 Tyrian—See Tyler Rubber Co.
 U. & G.—See United & Globe Rubber Co.
 United—See Mansfield Tire & Rubber Co.
 United Motors Service, Grand Blvd. at Cass, Detroit, Mich. "Formost."
 United Rubber Co., Akron, O. "Huskie."
 United States Tire Co., 1790 Broadway, New York, N. Y. "Nobby."
 United & Globe Rubber Co., Prospect & Fraser Sts., Trenton, N. J. "U. & G."
 Universal Rubber Products Co., Zellenople, Pa.
 V. K.—See Sturges Tire & Rubber Co.
 Veghte, Harry V., 709 Seventh Ave., New York, N. Y. (Dealers.) (See page 641.)
 Victor Rubber Co., Springfield, O. (See page 957.)
 Victory—See Dry Climate Tire Mfg. Co.
 Victory Tire & Rubber Co., Asbury Park, N. J.
 Viking—See Combination Rubber Mfg. Co.
 Virginia Rubber Co., Union Trust Bldg., Charleston, W. Va.

Vitalio—See Continental Rubber Works.
 Vulcan Rubber Co., Erie, Pa.
 Vulcaweld Rubber Co., Pottstown, Pa.
 Warner Tire & Rubber Co., Warner Rd., Cleveland, O.
 Warwick—See Washington Rubber Co.
 Washington Rubber Co., Washington, Pa. "Warwick."
 Wayne—See Fort Wayne Tire & Rubber Mfg. Co.
 Wayne—See Montford Rubber Co.
 Western Reserve Tire Corp., Cleveland, O. "Reserve."
 Western Rubber Co., 6200 S. Union Ave., Tacoma, Wash. "Sound."
 Williams Tire Co., Akron, O. "Monarch."
 Wilson Tire & Rubber Co.—See Rubber Co. of America.
 Wiregrip—See Lancaster Tire & Rubber Co.
 World Puncture Proof Tire Co., Ridge Bldg., Kansas City, Mo.
 Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa.
 X-L—See Excel Rubber Co.
 Yale Tire & Rubber Co., 1003 Dixwell Ave., New Haven, Conn.
 Zee-Zee Rubber Co., Yardville, N. J. "Haywood," "Climax."
 Zenith Tire & Rubber Co., Leader-News Bldg., Cleveland, O. "Mideo."

TIRES, Solid

American Rubber & Tire Co., 100 Beach St., Akron, O.
 Batavia Rubber Co., Batavia, N. Y.
 Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.
 Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.
 Buckeye Rubber Products Co. (Polack Solid Tire Division), Willoughby, O. "Polack." (See page 1005.)
 Bucyrus—See Henderson Tire & Rubber Co.
 Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y.
 Firestone Tire & Rubber Co., Miller & Sweetser Aves., Akron, O.
 Gibney Tire & Rubber Co., Conshohocken, Pa.
 Goodyear Tire & Rubber Co., Akron, O. (See page 963.)
 Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Bucyrus."
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Hood Rubber Products Co., Watertown, Mass.
 Johnstone Tire & Rubber Co., La Porte, Ind.
 Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.
 Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.
 McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.
 Mason Tire & Rubber Co., 802 Lake St., Kent, O.
 Milford Rubber Works, Milford, Ill.
 Mono-Twin—See United States Tire Co.
 Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
 Owen Tire & Rubber Co., 2336 Euclid Ave., Cleveland, O.

Everything is listed under the NOUN or principal word

Goodyear Tire and Rubber Co.

AKRON OHIO

Manufacturers of

**CORD AND FABRIC
Passenger Car Tires
and Solid, Cushion and
Pneumatic Truck Tires**

GOOD YEAR

A Wonderful Tube for Car Owners

Tirometer Heavy Touring Tubes have a combination air valve and air pressure gauge, protected by a transparent, practically unbreakable dust cap. A glance tells the correct air pressure.

Tubes are laminated construction, made of best grade smoked sheet rubber.

Tirometer Heavy Touring Tubes guard against the 90% of premature tire troubles and one-third mileage loss caused by improper inflation.

Advertised locally and nationally. Write for dealer terms.



Currie Bros. Co.
Incorporated
Atlanta, Ga.

Braender Bull Dog Giant



5-Ply; Oversize, 30x3½

The most satisfactory business can only be developed by selling the best. Ask us for proposition on the best tire manufactured.

Braender Rubber & Tire Co.
Rutherford, New Jersey

Branches:
New York Chicago Philadelphia
San Francisco

DELION CORD TIRES

Tires which maintain the highest standards of hand-craftsmanship

—but which sell at prices comparing favorably with those of any good tire on the market

—made in the new Delion factory with its modern equipment, second to none in the land.

Delion Tire & Rubber Co.
Baltimore, Maryland



Please mention The Automobile Trade Directory

TIRES, Solid (Continued)

Polaack—See Buckeye Rubber Products Co.
 Republic Rubber Co., Albert St., Youngstown, Ohio.
 Rimco—See Rubber Insulated Metals Corp.
 Rubber Insulated Metals Corp., 901 North Ave., Plainfield, N. J. "Rimco."
 Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Mono-Twin."
 Victor Rubber Co., Springfield, O.
 (See page 957.)

TIRES, Special

(Cushion, Sectional, Wood, Spring, etc.)
 American Wood Tire Co., 333 Dearborn St., Chicago, Ill.
 Automobile Spring Wheel Co., 413 W. Broadway, New York, N. Y. "Sipe."
 Brophy—See Pneumatic Cushion Inner Tube Co.
 Burgess Patent Tire & Mfg. Co., 19th & Campbell Sts., Kansas City, Mo.
 Compression Inner Tube Co., Rome, Ga.
 Dayton Rubber Mfg. Co., W. River St., Dayton, O.
 Edwards Rubber Co., Peoples Saving Bank Bldg., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O. "Mots." (See page 963.)
 Lambert Tire & Rubber Co., Akron, O. "Trubipruf."
 Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
 Liberty Airless Tire Corp., Carey, O.
 Mollitor Tire Co., 4241 Irving Park, Blvd., Chicago, Ill.
 Mots—See Goodyear Tire & Rubber Co.
 National Wheel Co., Wausau, Wis.
 Pneumatic-Cushion Inner Tube Co., 1 Appleton St., Boston, Mass. "Brophy."
 Rubber Insulated Metals Corp., Plainfield, N. J.
 Sipe—See Automobile Spring Wheel Co.
 Superior Tire & Rubber Co., 4511 N. Broad St., Philadelphia, Pa.
 Tension Tire Co., York, Pa.
 Triple Airless Tire Co., Manorville, Pa.
 Trubipruf—See Lambert Tire & Rubber Co.
 Valtung Steel Tire Co., 5 Columbus Circle, New York, N. Y.

TIRES, SPRING—See Tires, Special; also Wheels, Special

TOE CLIPS, MOTORCYCLE—See Clips, Motorcycle Toe

TOILET CASES—See Cases, Toilet

TONGS, TERMINAL—See Tools, Storage Battery Repair

TONNEAU SHIELDS—See Shields, Tonneau

TOOL BAGS—See Bags, Tool

TOOL BOX LOCKS—See Locks, Cabinet and Pad; also Catches, Spring

TOOL BOXES—See Boxes, Tool

TOOL CHECKS—See Checks, Brass Time, Tool and Pay

TOOL DESIGNERS—See Designers, Special Machinery and Tool

TOOL EXTENSION HANDLES—See Handles, Extension Tool

TOOL GRINDERS—See Grinders

TOOL HOLDERS—See Holders, Lathe and Planer Tool

TOOL KITS—See Kits, Tool

TOOL POST GRINDERS—See Drills, Electric Portable

TOOL RACKS—See Racks, Metal Tool

TOOL ROLLS—See Bags, Tool

TOOL STEEL—See Steel

TOOLS, AIR RELEASING—See Tools, Tire Deflating

TOOLS, BATTERY REPAIR—See Tools, Storage Battery Repair

TOOLS, BATTERY TERMINAL CLEANING—See Tools, Storage Battery Terminal Cleaning

TOOLS, BEARING PARTING FOR FORDS—See Tools, Cam-Shaft Bearing Parting

TOOLS, BEARING PULLING—See Pullers, Bearing

TOOLS, BORING—See Bars, Boring

TOOLS, Cam-Shaft Bearing Parting, for Fords

American—See Fairbanks Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.")
 (See pages 619 to 622.)
 Service Station Equipment Co.—See Fairbanks Co.

TOOLS, CHAIN ATTACHING—See Tools, Tire Chain Attaching

TOOLS, Chain Repair

(Tools or clamps for drawing together the ends of broken driving chains to facilitate making repairs. For Tire Chain Repair Tools—See Tools, Tire Chain, Repair.)

Bean—See Liberty Metal Products Co.
 Brown & Son, J. C., Butler, Ind.
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Central Flatiron Mfg. Co., Grand Ave., John-son City, N. Y. "Duo-Point."

Everything is listed under the NOUN or principal word

BLEMISHED TIRES LARGEST JOBBERS IN NEW ENGLAND

We specialize in SECONDS of the best quality

*Tire dealers will find it to their advantage to
communicate with us*

THE AKRON TIRE & RUBBER COMPANY, Inc.
24-26 Columbus Avenue BOSTON 17, MASS.



We are makers of both Cord and Fabric **SUPERSHOD** Tires. These Tires are of the very best quality that can be made—They are **SUPERSHOD**—wear longer—give better service. We also manufacture **Surety** (red) and **Axiom** (gray) Pneumatic inner tubes.

We fully protect our dealers, and all our products are made and sold upon this one proposition:

"Necessity may raise the price; Nothing shall lower the quality"

SURETY TIRE & RUBBER CO.
ST. LOUIS, U. S. A.

QUALITY

**CORD
TIRES**



**RED & GREY
TUBES**

The MALAY RUBBER CO. Executive Offices 1035 Guardian Building **Cleveland, Ohio**

Please mention The Automobile Trade Directory

TOOLS, Chain Repair (Continued)

Duo-Point—See Central Flatiron Mfg. Co.
 Handee—See Racine Handy Mfg. Co.
 Harris & Reed Mfg. Co., 1510-23 W. 15th St., Chicago, Ill.
 Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."
 Meyer, Henry T. C., 203 Helen Ave., Detroit, Mich.
 Necessity—See Macdonald & Co.
 Macdonald & Co., J. N., 194 Main St., Wethersfield, Conn. "Necessity."
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

TOOLS, CHAIN REPAIR, MOTORCYCLE, —See Tools, Motorcycle Chain Repair**TOOLS, COTTER PIN—See Pullers, Cotter Pin****TOOLS, Crank Pin Truing**

(For Crankshaft Grinding Machines—See Grinders, Crank Pin.)

Atherton-Salter Mfg. Co., St. Louis, Mo. "Shaftu."
 Atlas Mfg. Co., Dept. D, Millvale Station, Pittsburgh, Pa. (See page 967.)
 Emco Mfg. Co., Binghamton, N. Y. "Taber." (See page 521.)
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.
 Hallee—See Lee Tool & Mfg. Co.
 Krauter & Co., Newark, N. J.
 Lee Tool & Mfg. Co., H. A., 320 W. 20th St., Kansas City, Mo. "Hallee."
 Murrie-Ott Co., La Crosse, Wis.
 Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 269.)
 Railway Specialty Co., Atchison, Kans. "Rysco."
 Rysco—See Railway Specialty Co.
 Sawyer-Weber Tool Mfg. Co., 346 S. Alameda St., Los Angeles, Cal. "Weber." (See page 967.)
 Shaftu—See Atherton-Salter Mfg. Co.
 Southern Machine & Tool Co.—See Tuthill Sales Co.
 Taber—See Emco Mfg. Co.
 Tuthill Sales Co., St. Louis, Mo. (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo.) (See page 841.)
 Weber—See Sawyer-Weber Tool Mfg. Co.

TOOLS, CRANKSHAFT GRINDING—See Tools, Crank Pin Truing**TOOLS, Cylinder Lapping**

Clover Mfg. Co., 410 Main St., Norwalk, Conn. (See page 703.)

TOOLS, CYLINDER REBORING — See Tools, Portable Cylinder Reboring**TOOLS, Demountable Rim Contracting**

(Tools or Clamps for contracting or expanding split demountable rims to facilitate the changing of tires)
 Abbe, E. W., 19 Curtis St., New Britain, Conn.
 Accurate Machine Mfg. Co., 234 Fifth Ave., S., Minneapolis, Minn.
 B. & B.—See Bjornlie Mfg. Co.

Bjornlie Mfg. Co., 129 N. Broadway, Watertown, S. Dak. "B. & B."
 Brown Co., 31 Bradford St., Albany, N. Y. "Brownie."
 Brownie—See Brown Co.
 Burd High Compression Ring Co., Rockford, Ill.
 C. S.—See Canton Specialty Co.
 Canton Specialty Co., Canton, Ill. "C. S."
 Case—See Handy Mfg. Co.
 Davenport Mfg. Co., E. State St., Davenport, Iowa.
 Duplex Rim Device Co.—See Fairbanks Co.
 Essandee Corp., 330 W. 16th St., Los Angeles, Cal. (See page 655.)
 Eureka Rim Compressor Co., Addison, N. Y.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Duplex Rim Device Co., Chicago, Ill. "Safstroms.")
 Federal Corp., Westfield, Mass.
 Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.
 Friedstedt Mfg. Co., 2324-28 W. Lake St., Chicago, Ill.
 Giant—See Keel Specialty Co.
 Greb Co., 195 State St., Boston, Mass. (See page 747.)
 Handy Mfg. Co., Atlas Bank Bldg., Cincinnati, O. "Case."
 Heilmiller & Sons, C. C., Seattle, Wash.
 Hercules Rim Tool Co., 115 Commercial St., Los Angeles, Cal.
 Howell, C. B., E. 105th St., Cleveland, O.
 Hughes Motor Co., John P., Lynchburg, Va. "Red Giant."
 Hurst Mfg. Co., H. L. Greenwich, O. "Quik-Easy."
 J. B. Demountable Split Rim Tool Co., 68½ Seneca Ave., Detroit, Mich.
 Jackson—See National Safety Car & Equipment Co.
 Jancap Rim Tool Co., 77 Bedford St., Boston, Mass.
 K. P. Products Co., 250 W. 54th St., New York, N. Y.
 Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 125.)
 Lewsen Mfg. Co., Portland, Me.
 Little Giant—See Marquette Mfg. Co.
 Marquette Mfg. Co., St. Paul, Minn. "Little Giant." (See page 517.)
 Metal Products Mfg. Co., 121-29 Fifth Ave., S., Minneapolis, Minn. "Thiem."
 Motor Specialties Co., Waltham, Mass.
 National Safety Car & Equipment Co., Pierce Bldg., St. Louis, Mo. "Jackson."
 Pacific Rim Tool Sales Co., 2339 11th Ave., N., Seattle, Wash.
 Patented Products Co., 326 Calumet Ave., Detroit, Mich.
 Quick & Easy—See Wheel & Rim Works Corp.
 Quick-Easy—See Hurst Mfg. Co.
 Record Accessories Corp., 23-31 W. 43rd St., New York, N. Y.
 Red Giant—See Hughes Motor Co.
 Safstroms—See Fairbanks Co.
 Schuitze Machine Shop, Green & Lincoln Sts., Chicago, Ill.
 Schurman Auto Rim Removing Co., 5123 Penn Ave., Pittsburgh, Pa.
 Simplex Steel Stamping Co., 1926-28 Gravel Ave., St. Louis, Mo.
 Sprague Tire & Rubber Co., 18th & Oard Sts., Omaha, Neb.
 Standley Skid Chain Co., Boone, Ia. (See page 381.)
 Stanweld—See Standard Parts Co.
 Thiem—See Metal Products Mfg. Co.
 Trex—See Trexler Co.
 Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 521.)
 Welser's E. Z. Rim Tool Co., 433-35 High St., Hamilton, O.

Everything is listed under the NOUN or principal word

"THEY'RE MAKING TIRE HISTORY"

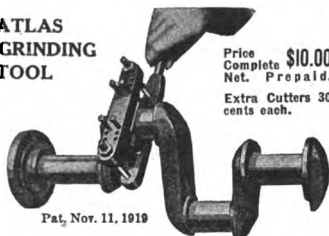


OVERSIZE
CORD AND FABRIC TIRES

Write or wire today for our broad-gauged, liberal selling franchise for dealers and distributors—It's a winner!

BLEKRE TIRE & RUBBER CO.
ST. PAUL, MINN.

ATLAS GRINDING TOOL



Price
Complete \$10.00
Net. Prepaid.
Extra Cutters 30
cents each.

Pat. Nov. 11, 1919

Atlas Crankshaft Grinder

Proves it a folly to scrape a bearing to crank pin that has worn oval or to pay a machine shop \$15 or \$25 for a lathe job.

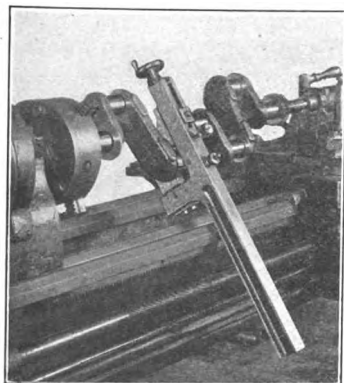
It will true up a crankshaft to less than one-thousandth of an inch in less than one hour without removing shaft from crankcase. Adjustable to all crank pins from 1 1/4 to 2 1/2 in. diameter. But one tool needed. Cutters good for truing 10 to 20 pins. 5,000 in use. Atlas Special Tool, 2 to 4 in. capacity, \$25.00.

Atlas Garage Unit

A machine for testing and straightening crankshafts, and gear press with housing assembly and piston vise attachments.

Jobbers: An attractive proposition awaits your inquiry. Send for circular describing.

Atlas Manufacturing Company
AUTOMOTIVE EQUIPMENT
Millvale Sta., Dept. "D," PITTSBURGH, PA.

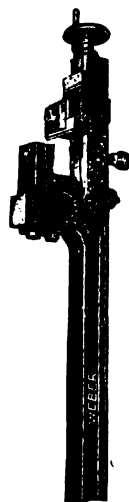


No Jigs

No Filing

No Offsetting

Weber Crank-Pin Re-Turning Tool



This tool is so constructed that the pins are turned **ROUND** and **PARALLEL** to the main bearings.

We guarantee that it will re-turn a Crank-Pin within as close limits of accuracy as any other known method. There is no faster method known.

Used and recommended by several leading manufacturers—names furnished on request.

At Your Jobbers or Write Direct

SAWYER-WEBER TOOL MFG. CO.
346 South Alameda Street
Los Angeles, Cal.

Please mention The Automobile Trade Directory

TOOLS, Demountable Rim Contracting (Continued)

Wheel & Rim Works Corp., 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."
Xcel Specialty Co., 38 Lewis Bldg., Buffalo, N. Y. "Excelsior," "Giant."

TOOLS, Fender Straightening

Stiles Mfg. Co., St. Louis, Mo.
(See page 527.)

TOOLS, GENERATOR, BRUSH SANDING FOR FORDS—See Sanders, Generator Brush**TOOLS, Lathe and Planer**

(See also Holders, Lathe and Planer Tool)

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
Carr—See Thompson & Son Co.
Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
Haynes Stellite Co., Citizens Bank Bldg., Kokomo, Ind. "Stellite."
Johnson—See Pratt & Whitney Co.
Marcy Tool Works, Putnam, Conn.
O. K. Tool Holder Co., Shelton, Conn.
Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Johnson," "Rhodes," "Woodbridge." (See page 373.)
Rhodes—See Pratt & Whitney Co.
Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.
Stellite—See Haynes Stellite Co.
Storts & Son, John, 210-13 Vine St., Philadelphia, Pa.
Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."
Union Tool Co., 48 E. River St., Orange, Mass.
Woodbridge—See Pratt & Whitney Co.

TOOLS, MAIN BEARING REAMING FOR FORDS—See Reamers, Main Bearing and Connecting Rod**TOOLS, Motorcycle Chain Repair**

Bean—See Liberty Metal Products Co.
Ero Mfg. Co., 700 W. 22nd Street, Chicago, Ill.
Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

TOOLS, Piston Ring Compressing

(To facilitate the entering of piston and ring into cylinder)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis. "Victory."
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 344.)
Tip-Top—See Tipton Mfg. Co.
Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 333.)

Victory Ring Compressor Co.—See Jonas, C. N. & F. W.
Victory—See Johnson Specialty Co.

TOOLS, Piston Ring Compressing, for Fords.

(To facilitate the entering of piston and ring into cylinder)

Duplex Rim Device Co.—See Fairbanks Co.
Fairbanks Co., New York, N. Y. (Sole Distributors for Duplex Rim Device Co., Chicago, Ill.)
Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo.
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 344.)
Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
Tip-Top—See Tipton Mfg. Co.
Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 333.)
Victory Ring Compressor Co.—See Jonas, C. N. & F. W.

TOOLS, Piston Ring Groove Cleaning

Lawson, G. D., Pocatontas, Iowa.

TOOLS, Piston Ring Removing

(Special pliers or tongs for removing rings from pistons)

Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
B & B Motor Specialties Co., 607 N. 13th St., Philadelphia, Pa.
Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.
Ensworth, Neil C., Warren, Pa.
Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."
Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis.
Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for W. S. Rush & Co., Los Angeles, Cal.)
Monarch Auto Specialties Co., 1211-13 Clybourn Ave., Chicago, Ill.
Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
Munger—See Splitdorf Electrical Co.
Nu Pep Mfg. Co., 1224 Farwell Ave., Chicago, Ill.
Rush & Co., W. S.—See Jonas, C. N. & F. W.
Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."
Tip-Top—See Tipton Mfg. Co.
Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 333.)
Utility—See Hartenstein, R. P.
Wilhelm-Smith Machine Co., 236 Bingham St., Reading, Pa.

TOOLS, PLANER—See Tools, Lathe and Planer**TOOLS, Pneumatic**

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. (See page 368.)
Cleveland Pneumatic Tool Co., 2844 E. 78th St., Cleveland, O.

Everything is listed under the NOUN or principal word



Trade Mark Reg. U.S. Pat. Off.
Time to Re-tire?
(Buy Fisk)

The Fisk Tire Line

THE Non-Skid (fabric) is a remarkably good tire to sell at a competitive price.

The Fisk Red-Top is an extra ply, an extra heavy tread tire (fabric) without competition, made for small cars for hard usage on rough roads.

The Fisk Cord cannot be excelled in tire quality or in selling points.

Fisk truck tires, both solid and pneumatic, are business builders.

The Fisk dealer relation is an exceptionally pleasant one.

Sold Only by Dealers .

Please mention The Automobile Trade Directory

TOOLS, Pneumatic (Continued)

Cochran Pipe Wrench Mfg. Co., 78th & Kimbark Sts., Chicago, Ill.
 Dayton Pneumatic Tool Co., 314 E. Fifth St., Dayton, O. "Green."
 Green—See Dayton Pneumatic Tool Co.
 Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.
 Hergl Mfg. Co., Bridgeport, Conn.
 Independent Pneumatic Tool Co., Chicago, Ill. "Thor."
 Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Little David."
 Keller Pneumatic Tool Co., Grand Haven, Mich. (See page 339.)
 Little David—See Ingersoll-Rand Co.
 Oldham & Son Co., George, 4316-22 Lackawanna St., Philadelphia, Pa.
 Thor—See Independent Pneumatic Tool Co.
 Titan Automatic Tool Co., 25 W. Broadway, New York, N. Y.
 Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.

TOOLS, Portable Cylinder Reboring

(See also *Machines, Cylinder Reboring; also Bore Boring*)

Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
 Dunn Co., J. E., 299 Franklin St., Hempstead, N. Y.
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.
 Flinchbaugh Machine Co., York, Pa. "York." (See page 971.)
 Hubaco—See Hughson-Bacon Co.
 Hughson-Bacon Co., Oakland, Cal. "Hubaco." (See page 598.)
 Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 623.)
 Universal Tool Co., Garwood, N. J. "Utco." (See page 971.)
 Utco—See Universal Tool Co.
 York—See Flinchbaugh Machine Co.

TOOLS, Portable Cylinder Reboring, for Fords

Champion Mfg. Co., 2908-10 W. Fletcher St., Philadelphia, Pa. (See page 1025.)
 Davis—See Hinckley Machine Works.
 Detroit Garage Equipment Co., 406 E. Jefferson Ave., Detroit, Mich.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. (See pages 619 to 622.)
 Flinchbaugh Machine Co., York, Pa. "York." (See page 971.)
 Goruse Co., Elmira, N. Y.
 Heiser's Special Tool Co., 2001 Washington St., Kansas City, Mo.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."
 Hinckley-Myers Co., Water St., Jackson, Mich.
 Hubaco—See Hughson-Bacon Co.
 Hughson-Bacon Co., Oakland, Cal. "Hubaco." (See page 598.)
 Phoenix Mfg. Co., Eau Claire, Wis.
 Storm Mfg. Co., Dept. L, Minneapolis, Minn. (See page 623.)
 Universal Tool Co., Garwood, N. J. "Utco." (See page 971.)
 Utco—See Universal Tool Co.
 York—See Flinchbaugh Machine Co.

TOOLS, Radiator Fin Straightening for Fords

Bonney Forge & Tool Works, Allentown, Pa.

TOOLS, RESEATING—See Tools, Valve Reseating**TOOLS, RIM CONTRACTING—See Tools, Demountable Rim Contracting****TOOLS, RING REMOVING—See Tools, Piston Ring****TOOLS, SCRAPING—See Scrapers****TOOLS, Spring Leaf Separating**

(For separating the spring leaves so they may be lubricated; for Spring Leaf Cups—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Lubricating Strips—See Strips, Spring Leaf Lubricating)

Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Cincinnati Tool Co., Main Ave., Norwood, O.
 Cochran—See Larco Wrench & Mfg. Corp.
 Jimmy—See Thomas-Armstrong Co.
 Knowlsons—See Spring Leaf Lubricator Co.
 Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 O.K.—See West Haven Mfg. Co.
 Onan, David W., 1823 Penn Ave., N., Minneapolis, Minn. (See page 539.)
 Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.
 Spring Leaf Lubricator Co., 1119 Packard St., Ann Arbor, Mich. "Knowlsons."
 Standard Engineering Works, 59 Social St., Woonsocket, R. I.
 Struve Mfg. Co., H. H., 3442 Harlem Pl., Cincinnati, O.
 Thomas-Armstrong Co., Geneva, N. Y. "Jimmy."
 Tomahawk Mfg Co., 1826 Mannering Rd. S. E., Cleveland, O.
 Volz, F. W., 3914 Grant Rd., Washington, D. C.
 Weise, A. F., 133 W. Washington St., Chicago, Ill.
 West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "O.K."
 Winther & Sons, C. W., Fresno, Cal.

TOOLS, SPRING LUBRICATING—See Tools, Spring Leaf Separating**TOOLS, Storage Battery Repair**

Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. (See page 201.)
 Buffum Tool Co., Louisiana, Mo. (See page 396.)
 Orum, S. R. M., 5143 Keyser St. (North Philadelphia), Philadelphia, Pa.
 Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.
 Service Station Supply Co., 124 E. Larned St., Detroit, Mich.

Everything is listed under the NOUN or principal word

Factory Seconds

First Quality

TIRES and TUBES

Dealers Write for Quotations
Advertised Reliable Makes
Large or Small Quantities
Shipped C. O. D. or SD/BL.

NAUGATUCK TIRE & RUBBER COMPANY

INCORPORATED

888 Eighth Ave.

New York City

Rebore Cylinders With the York

You can do it with a York Cylinder Reboring Tool and even an inexperienced man can turn out extremely accurate and thoroughly satisfying work. Any size or make of passenger car, truck or tractor motor can be rebored with this tool. Simply clamp over cylinder and operate by hand or power. Power drive attachment furnished at extra cost if desired. The York Cylinder Reboring Tool is absolutely guaranteed against defects in workmanship or material.



Write us to-day and let one of our representatives give you a demonstration and show you our complete line.

SOME UNIQUE FEATURES OF THE YORK

A **THREADLESS BOLLING BAR.** This eliminates wear at the most strategic point and gives the tool an exceedingly long life.

A **SECTIONAL BASE.** Its use is most necessary when taking a second cut, as the original center can be retained.

FEEDING. The feed is controlled

by a ratchet trip. The trip is operated by six feed pins or trips placed around the outside of the gear-case. This gives the operator a variation of six different feeds, which are pleasingly adaptable to any cut or finish desired.

DRIVE. The tool gets an even and steady drive through bevel gears driven from a shaft on the side of gear-case. To this shaft a crank can be attached, for hand power, or a gear drive can be attached to operate with either electric drill or motor.

FLINCHBAUGH MACHINE CO., York, Pa.



UNIVERSAL TOOLS

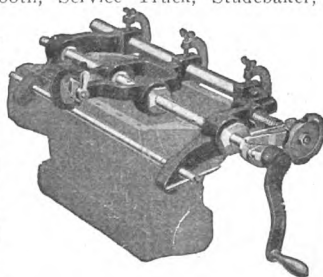
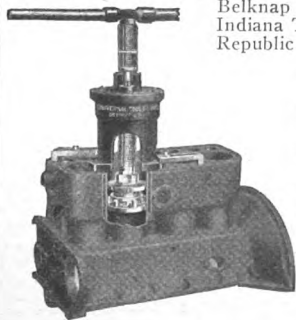


Are you equipped to secure the profits that come from good repair work? What about Reboring Cylinders?

Any mechanic can rebore cylinders with the Universal Cylinder Reboring Tool—operated either by hand or with our Universal Power Drive Attachment driven by any available power. With it detachable head cylinders can be rebored right in the chassis. Used and recommended by Chalmers, Dodge, Daniels, Essex, Golden-

Belknap & Swartz, Gramm-Bernstein, Gray Motors, Hudson, Indiana Truck, Maxwell, Mitchell, Nash, Oakland, Olds, Paige, Republic Truck, Scripps-Booth, Service Truck, Studebaker, Overland, White.

You can replace easily main bearings in the Ford and Fordson by using our Universal Main Bearing Babbiting and Boring Equipment. Used by 14 out of the 16 authorized Ford dealers of Detroit.



Write for Catalog

THE UNIVERSAL TOOL COMPANY, Inc.
GARWOOD, N. J. (Formerly of Detroit)

Please mention The Automobile Trade Directory

TOOLS, Storage Battery Repair (Continued)

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa. (See page 295.)
Stuckeman Bros., 330 Liberty Ave., Pittsburgh, Pa.
Thompson Mfg. Co., Liberty & North Sts., Meadville, Pa.
Xander, J. G., 324 Court St., Reading, Pa.

TOOLS, Storage Battery, Terminal Cleaning

Four-in-One—See Xander, J. G.
Xander, J. G., 324 Court St., Reading, Pa.
"Four-in-One."

TOOLS, STUD BOLT—See Extractors, Stud Bolt

TOOLS, Threading

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 357.)
Federal Products Corp., 393 Harris Ave., Providence, R. I.
Geometric Tool Co., Blake & Valley Sts., New Haven, Conn.
Modern Tool Co., State & Second Sts., Erie, Pa.
National Acme Co., Cleveland, O.
(See page 667.)
Rickert-Shafer Co., 613 W. 11th St., Erie, Pa.
Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.
Victor Tool Co., Waynesboro, Pa.

TOOLS, Tire

(For taking off and putting on tires; for Rim Tools—See Tools, Demountable Rim Contracting)

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)
B. B.—See Bjornlie Mfg. Co.
Bjornlie Mfg. Co., 129 N. Broadway, Watertown, S. Dak. "Perfect," "B. B."
Block Tire Tool Co., 505 Eighth St., Cincinnati, O.
Bowles & Little, 611 Mulberry St., Des Moines, Ia. "Case."
Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless-Thor."
Buckeye—See Central Brass & Fixture Co.
Carlson & Co., Charles G., 3725 Wall St., Chicago, Ill. "Star."
Case—See Bowles & Little.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Springfield," "Buckeye."
Champ Spring Co., 2107 Chouteau Ave., St. Louis, Mo.
Cox Brass Mfg. Co., Albany, N. Y.
(See page 171.)
Cunningham & Berrier, 25 W. 43rd St., New York, N. Y. (Sole Distributors for D. C. Woodworth, Lewiston, Me.)
(See page 327.)
Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.
Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
(See page 987.)

Greb Co., 195 State St., Boston, Mass.
(See page 747.)
Hugro Mfg. Co., Warsaw, Ind.
Jackson—See Standard Machine Mfg. Co.
Jiffy Tire Setter Co., 205 W. Center St., Warsaw, Ind.
L. & L.—See Larson & Lundberg.
L. & M.—See Long Machine Works.
Larson & Lundberg, 325 N. Main St., Kewanee, Ill. "L. & L."
Lewsen Mfg. Co., Portland, Me. "Two-In-One."
Lightning—See Thorwald Mfg. & Sales Co.
Long Machine Works, Adam A., Ave. E. & St. Paul St., Rochester, N. Y. "L. & M."
M. M. & B. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.
Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 901.)
Marquette Mfg. Co., St. Paul, Minn.
(See page 517.)
Martin & Co., Edward, 35 S. Clinton St., Chicago, Ill. "Perfection."
Matchless-Thor—See Bridgeport Hardware Mfg. Co.
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Morgan Mfg. Co., Court St., Keene, N. H.
(See page 755.)
National Jack & Mfg. Co., 130-34 S. Clinton St., Chicago, Ill.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
Nemours Trading Corp., 46th St. & Lexington Ave., New York, N. Y. "Woodworth."
Perfect—See Bjornlie Mfg. Co.
Perfect—See Pratt Mfg. Co.
Perfect Handle—See Smith & Co.
Perfection—See Martin & Co.
Perfection Mfg. Co., New Martinsville, W. Va.
Pratt Mfg. Co., Wm. B., 85 W. Lake St., Chicago, Ill. "Perfect."
Rhodes Mfg. Co., S. Division St. & First Ave., Grand Rapids, Mich.
Shawver Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."
Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
Spee Dee—See Hugro Mfg. Co.
Springfield—See Central Brass & Fixture Co.
Springfield—See Shawver Co.
Standard Machine Mfg. Co., Pierce Bldg., St. Louis, Mo. "Jackson."
Star—See Carlson & Co.
Thorwald Mfg. & Sales Co., 1307 Jackson St., Omaha, Neb. "Lightning."
Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.
Two-In-One—See Lewsen Mfg. Co.
Walker Mfg. Co., Hamilton & Michigan Sts., Racine, Wis.
Wallace Engineering Co., 543 W. Jackson Blvd., Chicago, Ill.
Wieland, Chas., Yankton, S. D.
Woodworth—See Nemours Trading Corp.
Woodworth, D. C.—See Cunningham & Berrier.

TOOLS, Tire Chain Attaching

(Screw or toggle clamps to draw ends of tire chains together when putting on wheel so they may be easily hooked or fastened)

Alcemo Mfg. Co., 120 Bridge St., Newark, N. J. (See page 249.)
Atlanta Specialty Mfg. Co., 2941-43 Locust St., St. Louis, Mo.

Everything is listed under the NOUN or principal word

TOOLS, Tire Chain Attaching (Continued)

- Buckeye—See Central Brass & Fixture Co.
 Buffum Tool Co., Louisiana, Mo.
 (See page 395.)
 Central Brass & Fixture Co., Segler & Hughes
 Sts., Springfield, O. "Buckeye."
 Central Flatiron Mfg. Co., Grand Ave., John-
 son City, N. Y.
 Foss-Hughes Co., 31st & Market Sts., Phila-
 delphia, Pa. "Right Way."
 Kraemer & Co., Newark, N. J.
 (See page 1001.)
 Right Way—See Foss-Hughes Co.

TOOLS, Tire Chain Repair

(For removing old and applying new cross sections
 on tire chains)

- Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 B. & A. Machine Co., 203 W. 75th St., New
 York, N. Y. "Spook."
 Buffum Tool Co., Louisiana, Mo. "Chi-
 max." (See page 395.)
 Climax—See Buffum Tool Co.
 Kraemer & Co., Newark, N. J.
 (See page 1001.)
 McKaig Drop Forge Co., 14 Perry St., Buf-
 falo, N. Y.
 Shelley Tool Co., Saranac Lake, N. Y.
 Spook—See B. & A. Machine Co.

TOOLS, Tire Deflating

(For holding down valve plunger to allow air to
 escape without removing the plunger; for Deflating
 Machines—See Machines, Tube Deflating and Valve
 Removing)

- Ideal—See Van's Auto Specialty Co.
 Security Tool Works, 115-17 S. Clinton St.,
 Chicago, Ill.
 Sprick Bros. Investment Co., Stickney, S.
 Dak.
 Van's Auto Specialty Co., Clyde, O. "Ideal."

TOOLS, Tire Spreading

(For Tire Spreading Machines—See Machines,
 Tire Inspecting)

- Nation Co., 332 W. 16th St., Los Angeles, Cal.

TOOLS, Tire Tread Rolling and Peeling

- Diamond E—See Everhard Mfg. Co.
 Everhard Mfg. Co., 317-19 Schroyer Ave.,
 S. W., Canton, O. "Diamond E."
 Leader Skid Chain Co., 4104 Manchester Ave.,
 St. Louis, Mo.
 P. S. M. Co., 3116-36 Snelling Ave., Min-
 neapolis, Minn. (See page 1047.)
 Sanport Co., Murphy Bldg., Indianapolis, Ind.
 Western Rubber Mold Co., 15 N. Summit
 St., Chicago, Ill. (See page 657.)
 Zweibel Bros. Co., 482 Milwaukee St., Mil-
 waukee, Wis.

TOOLS, Tire Valve Rethreading

- All-In-One—See National Jack & Mfg. Co.
 Five-In-One—See Schrader's Son, A.

G T D—See Greenfield Tap & Die Corp.
 Greenfield Tap & Die Corp., Greenfield,
 Mass. "Hercules," "Utility," "G T D."
 (See page 915.)

Hercules—See Greenfield Tap & Die Corp.
 National Jack & Mfg. Co., 120-34 S. Clinton
 St., Chicago, Ill. "All-In-One."
 Nelson Mfg. Co., A., 2700 Southport Ave.,
 Chicago, Ill. (See page 83.)

Omega—See Stevens & Co.
 Roberge & Sons Mfg. Co.—See Knight Co.
 Schrader's Son, A., Brooklyn, N. Y. "Five-
 In-One." (See page 506.)
 Stevens & Co., 375 Broadway, New York,
 N. Y. "Omega." (See page 201.)
 Utility—See Greenfield Tap & Die Corp.

TOOLS, Tire Vulcanizing

- Diamond E—See Everhard Mfg. Co.
 Everhard Mfg. Co., 317-19 Schroyer Ave.,
 S. W., Canton, O. "Diamond E."
 Fairbanks Co., New York, N. Y. (Sole
 Distributors for T. & T. Tire Dresser
 Co., San Francisco, Cal.)
 (See pages 619 to 622.)
 P. S. M. Co., 3116-36 Snelling Ave., Min-
 neapolis, Minn. (See page 1047.)
 T. & T. Tire Dresser Co.—See Fairbanks Co.

**TOOLS, TRANSMISSION BAND RIVET-
ING FOR FORDS—See Machines, Brake
Band Riveting****TOOLS, Transmission Band Spring
Compressing for Fords**

- Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Knight Co., Hatry, S. W. Life Bldg., Dallas,
 Tex. (Sales Department for Roberge &
 Sons Mfg. Co., Dallas, Tex.)

**TOOLS, Transmission Band Spring
Connecting for Fords**

- Hinckley-Myers Co., Water St., Jackson, Mich.

**TOOLS, TREAD PEELING—See Tools,
Tire Tread Rolling and Peeling****TOOLS, TREAD ROLLING—See Tools,
Tire Tread Rolling and Peeling****TOOLS, Valve Cage Removing**

- Culavin, Geo. H., Dunlap, Ia.
 J & B Mfg. Co., Pittsfield, Mass.
 (See page 949.)
 Newton Mfg. Co., Church St., Plainville, Conn.

TOOLS, Valve Grinding

(For Valve Grinding Machines—See Machines, Valve
 Seating)

- Ainge Tool, Die & Machine Works, Geo. H.,
 18-20 S. Spring St., Springfield, O.
 Albertson & Co.—See Jonas, C. N. & F. W.
 American Radio & Research Corp., Medford
 Hillside, Mass. "Whitcomb."
 Asch and Co., Inc., 10-24 W. 61st St., New
 York, N. Y. (Eastern & Southern Dis-
 tributors for "Sioux" Tools.)
 (See page 243.)
 Ashcroft Mfg. Co., 119 W. 40th St., New York,
 N. Y.

Everything is listed under the NOUN or principal word

TOOLS, Valve Grinding (Continued)

Au-To Compressor Co., Wilmington, O.
 "Turko," "Oro."
 Autoquip Mfg. Co., Rochester, N. Y.
 (See page 761.)
 B & B Motor Specialties Co., 607 N. 18th St., Philadelphia, Pa.
 Baldwin—See Universal Valve Grinder Co.
 Bowen Products Corp., 383 17th Ave., S. E., Minneapolis, Minn. "Perfect."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Brown, W. C., 584 Sherman St., Niles, O. "Kandikid."
 Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Burd High Compression Ring Co., Rockford, Ill.
 Common Sense Mfg. Co., 8 S. Dearborn St., Chicago, Ill. "Victor." (See page 977.)
 E-Z—See Syracuse Wrench Co.
 Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Goodell-Pratt Co., Greenfield, Mass.
 Graham Roller Bearing Corp., Connersport, Pa. (See page 227.)
 Hi-Speed—See Loomis-Beardsley Co.
 Hudson Motor Specialties Co., 1923 Arch St., Philadelphia, Pa.
 Jameson & Burbank, 19 Walnut St., Neponsett, Mass. "Little Wonder."
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia. "Sioux.")
 Kaiser, L. J., 2274 Park Blvd., Detroit, Mich. "Uni-Ver-Sal."
 Kandikid—See Brown, W. C.
 Kellogg Mfg. Co., Rochester, N. Y. (See page 753.)
 Lansfield Mfg. Co., 510 First Ave., West Haven, Conn.
 Little Wonder—See Jameson & Burbank.
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Hi-Speed." (See page 975.)
 M-B Tool Co., Danielson, Conn.
 M. & M. Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 977.)
 Millers Falls Co., Millers Falls, Mass.
 Minute—See Newton Mfg. Co.
 Mosco—See Motor Specialties Co.
 Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)
 Motor Specialties Co., Waltham, Mass. "Mosco."
 Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.
 Nasco—See National Auto Specialty Co.
 National Auto Specialty Co., Tama, Ia. "Nasco."
 New Favorite Mfg. Co., Columbus, O.
 Newton Mfg. Co., Church St., Plainville, Conn. "Minute."
 Oro—See Au-To Compressor Co.
 Perfect—See Bowen Products Corp.
 Rothermich, A. P., 2915 N. Taylor Ave., St. Louis, Mo.
 Simplicity—See Universal Equipment & Supply Co.
 Sioux—See Jonas, C. N. & F. W.
 Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."
 Turko—See Au-To Compressor Co.
 Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 975.)
 Uni-Ver-Sal—See Kaiser, L. J.
 Victor—See Common Sense Mfg. Co.
 Wall, J. H., 290 Hope St., Bristol, R. I.

Whitcomb—See American Radio & Research Corp.
 White Mfg. Co., 511 Lincoln Way, South Bend, Ind.

TOOLS, Valve Grinding, for Fords

Albertson & Co.—See Jonas, C. N. & F. W.
 American Radio & Research Corp., Medford Hillsdale, Mass. "Whitcomb."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Sioux" Tools.) (See page 243.)
 Corbin, P. & T., Park & Orchard Sts., New Britain, Conn.
 Efemco—See Foster, Merriam & Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 243.)
 Fawco—See Faw Co.
 Graham Roller Bearing Corp., Connersport, Pa. (See page 227.)
 Hi-Speed—See Loomis-Beardsley Co.
 Hudson Motor Specialties Co., 1923 Arch St., Philadelphia, Pa.
 Humboldt—See Republic Auto Parts Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia. "Sioux.")
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Hi-Speed." (See page 975.)
 M-B Tool Co., Danielson, Conn.
 Metal Stamping Co., 15th St. & East Ave., Long Island City, N. Y.
 Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Waltham, Mass. "Mosco."
 Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 New Favorite Mfg. Co., Columbus, O.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."
 Sioux—See Jonas, C. N. & F. W.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Uniq—See Spiro Mfg. Co.
 Wall, J. H., 290 Hope St., Bristol, R. I.
 Whitcomb—See American Radio & Research Corp.
 White Mfg. Co., 511 Lincoln Way, South Bend, Ind.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 70.)

TOOLS, Valve Lifting and Spring Compressing

(For compressing valve springs so that the pin or key may be readily removed or inserted and the valve taken out or put in)

Ainge Tool, Die & Machine Works, Geo. H., 18-20 S. Spring St., Springfield, O.
 American Metal Parts Mfg. Co.—See Fulton Co.
 American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Au-To Compressor Co., Wilmington, O. "Oro," "Turko."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Everything is listed under the NOUN or principal word

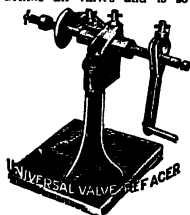
Tools that Should Be in Every Garage

The Just Simplicity Valve Grinder is the sturdiest, handiest, fastest and most satisfactory ball-bearing valve grinding tool on the market. Grinds all valves and is so designed that even the unskilled operator can do with it exactly what the hardness, size and condition of the valve requires. The oscillating motion may be varied at will. Price, \$2.50; West of Rockies, \$2.60. Sold with Money-Back Guarantee.

Just's Simplicity Valve Grinder and Refacer

refaces, edges, thins and reshapes distorted and burned valve heads, saving time and replacement expense. Will correctly reface any valve that can be resorted in the valve guide. A few turns is all that is required to reface the poorest of valves. Retail price \$10.00. Fully guaranteed.

Universal Equipment and Supply Company
Syracuse, N. Y.



Don't Miss The Opportunity

*Mr. Manufacturer, to have ALL your products listed in
The Automobile Trade Directory under their proper heads*

Always carry us on your mailing list, always make certain that we receive a copy of your catalog every time a new edition is printed.

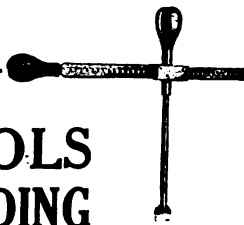
Because every day in the year and innumerable times a day The Automobile Trade Directory is consulted by thousands of buyers who rely on this one source of information and use this one Directory to guide them to their shopping places.

You serve your own interests if you see to it that a copy of every catalog reaches our files as soon as it is ready for distribution.

243 W. 39th Street The Automobile Trade Directory New York City



LOOMIS-BEARDSLEY VALVE TOOLS LIFTING--GRINDING



NEVER-SLIP LIFTERS

New and improved lifters for fourteen different makes of cars and a new and improved Universal (adjustable) that fits 90% of all engines—these now comprise the Loomis-Beardsley line of "Never-Slips." For the improved, Universal (adjustable) lifter, \$2.50; for the Ford, \$1.00; for the improved Dodge, Hudson, Hupmobile, Chalmers, Maxwell, Overland 4, Oldsmobile 8, Marmion, Packard (Twin Six), Studebaker, Continental (9N & 7R) and Kissel, \$1.50 each. Simple in construction, satisfactory in work and low in price.

HI-SPEED GRINDERS

This valve grinder is a marvel of speed, accuracy and durability. It will put a glass-like finish on the worst pitted set of valves of any make engine in record time. A light, handy, simple tool that is ahead of all others and preferred by the expert as well as the amateur mechanic. Works on the "screw-driver" principle. Pressure and speed are easily controlled. Price \$3.50.

THE LOOMIS-BEARDSLEY CO.

1123 Mt. Vernon Ave.

Columbus, Ohio

Please mention The Automobile Trade Directory

TOOLS, Valve Lifting and Spring Compressing (Continued)

Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. (Sole Distributors for Fay Mfg. Co., New York, N. Y. "Fay-Oh-Rite.")

Brooksmith Mfg. Co., 1866-80 Menard St., St. Louis, Mo.

Bryant—See Stevens & Co.

Buffum Tool Co., Louisiana, Mo. (See page 395.)

C. P.—See Clinton Machine Works.

Clinton Machine Works, 460 High St., Clinton, Mass. "C. P."

Day's Workrite—See MacKenzie-Waterhouse Co.

Duby, J. F., 11 River St., Mattapan, Mass. (See page 669.)

E-Z—See Syracuse Wrench Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Efemco—See Foster, Merriam & Co.

Essen Motor Service, 138-40 Lott St., Brooklyn, N. Y.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Fay-Oh-Rite—See Bridgeport Hardware Mfg. Co.

Fay Mfg. Co.—See Bridgeport Hardware Mfg. Corp.

Fellbach, A. O., North Milwaukee, Wis.

Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.

Fitz-Awl—See Wayland Specialty Mfg. Co.

Flexible Valve Remover Co., 201 Eddy St., Providence, R. I.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)

Freehand—See Valve Remover Sales Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis. "Handy.") (See page 1020.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)

Hallbauer Lifter Co., 1537 Wellston Ave. (Wellston), St. Louis, Mo.

Hallgren, Carl, 683 Summit Ave., Pasadena, Cal.

Handy—See Fulton Co.

Hadden Place Machine Co., East Orange, N. J. "Stevenson." (See page 977.)

Hoadley, F. B., 479 Willow St., Waterbury, Conn.

Humboldt—See Republic Auto Parts Co.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Porter, Inc., San Diego, Cal. "Perfection.") (See page 344.)

K-D Mfg. Co., Lancaster, Pa. "Kay-Dee."

Kay-Dee—See K-D Mfg. Co.

King Pressed Steel & Mfg. Co., Boston, Mass.

Krauter & Co., Newark, N. J. (See page 1001.)

Lightnin—See Parkhurst & Co.

Leomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. (See page 975.)

MacKenzie-Waterhouse Co., 828 Transportation Bldg., Chicago, Ill. "Day's Workrite."

Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection."

Mechanical & Electrical Mfg. Co., 2327 Prairie Ave., Chicago, Ill. "Triumph."

Merts Co., H. B., 1408 Rutherford Ave., Pittsburgh, Pa.

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.

Mickey—See Van's Auto Specialty Co.

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."

Morgan Mfg. Co., Court St., Keene, N. H. "Utility." (See page 755.)

National Jack & Mfg. Co., 180-34 S. Clinton St., Chicago, Ill.

Never Slip—See Eckhouse & Co.

New Favorite Mfg. Co., Columbus, O.

Newton Mfg. Co., Church St., Plainville, Conn.

Only Grease Gun Co., Newton, Ia. "T. & L."

Oro—See Au-To Compressor Co.

Parkhurst & Co., H. G., 180 N. Dearborn St., Chicago, Ill. "Lightnin'."

Perfect Handle—See Smith & Co.

Perfection—See Martin & Co.

Perfection—See Jonas, C. N. & F. W.

Porter Inc.—See Jonas, C. N. & F. W.

Price Auto Tool Works, W. W., Elm Grove, W. Va.

Radium—See Milwaukee Auto Specialty Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Humboldt."

Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.

Sjoholm, N. P., 11 Westmoreland Pl., St. Louis, Mo.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle," "Ultimate."

Stevens & Co., 375 Broadway, New York, N. Y. "Bryant." (See page 201.)

Stevenson—See Hadden Place Machine Co.

Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo. "Universal."

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."

T. & L.—See Only Grease Gun Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 521.)

Triumph—See Mechanical & Electrical Mfg. Co.

Turco—See Au-To Compressor Co.

Ultimate—See Smith & Co.

Universal—See Sunnen Products Co.

Utility—See Morgan Mfg. Co.

Valve Remover Sales Co., 1207 Oak St., Kansas City, Mo. "Freehand."

Van's Auto Specialty Co., Clyde, O. "Mickey."

Vlcek Tool Co., Cleveland, O.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Fitz-Awl."

TOOLS, Valve Lifting and Spring Compressing, for Fords

(For compressing valve springs so that the pin may be readily removed or inserted and the valve taken out or put in)

Abel—See Schnabel Co.

American—See Fairbanks Co.

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Day's Workrite—See MacKenzie-Waterhouse Co.

Everything is listed under the NOUN or principal word

M-&-M GAS ECONOMIZERS

(absolutely automatic)



Pat. Pending

FOR ALL CARS and TRUCKS

Cylinder and Manifold Types

Guaranteed to save 20% of gasoline ordinarily used. Also to increase speed, power and motor efficiency.

DEALER CONNECTIONS
DESIRED

M. & M. MFG. CO.

7447 So. Chicago Ave.
CHICAGO, ILL.

STEVENSON QUICK ACTION VALVE REMOVER



Threaded
SPRING
Ratchet
Dog

SWIVEL
HEAD

LIST
\$2.50

Standard Model

Hedden Place Machine Co.
East Orange, New Jersey

The handiest, fastest-working and safest tool for the purpose. Positive, quick acting, adjustable and gives freedom for working. Now made in extra width size for use on Dodge and Cadillac without removing manifolds. Liberal discount to dealers and jobbers. Sample sent postpaid anywhere in U. S. on receipt of price.

THE NEW WAY TO GRIND VALVES

The Victor Valve Grinder is a screw driver, until you open out a lever in the handle—

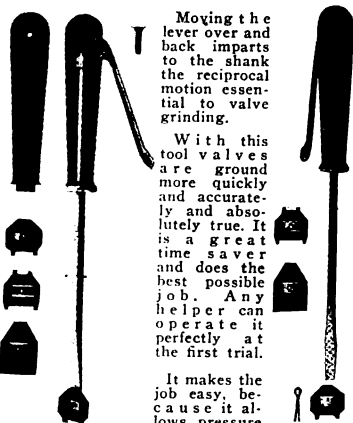
Then it becomes a special valve grinder and an instrument of marvelous facility and twofold effectiveness.

Swinging the lever over to the top of the handle to the other side revolves the shank of the tool.

The VICTOR VALVE GRINDER

Master of them all

Coming with this tool are a number of keys instantly attachable to the screw driver end and fitting or engaging with any valve on any car from Ford to Twin-Six Packard.



Moving the lever over and back imparts to the shank the reciprocal motion essential to valve grinding.

With this tool valves are ground more quickly and accurately and absolutely true. It is a great time saver and does the best possible job. Any helper can operate it perfectly at the first trial.

It makes the job easy, because it allows pressure

to be brought against the valve—just enough of it and in the right way—with one hand, while the other hand is used to operate the handle.

This tool and kit of keys is worth its weight in gold. All it costs is \$3. Money back if not satisfied.

Write for attractive agency proposition

Common Sense Mfg. Co.

8 South Dearborn Street
CHICAGO, ILL.

TOOLS, Valve Lifting and Spring Compressing, for Fords (Cont'd)

Donlin Auto Co., C. A., Hopkins, Mo.
 Doby, J. F., 11 River St., Mattapan, Mass.
 (See page 669.)
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Efemco—See Foster, Merriam & Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)
 Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.
 Fitz-Awl—See Wayland Specialty Mfg. Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)
 Fulton Co., Milwaukee, Wis. (See pages 1017 to 1022.)
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)
 Humboldt—See Republic Auto Parts Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Porter, Inc., San Diego, Cal. "Perfection.") (See page 344.)
 K-D Mfg. Co., Lancaster, Pa. "Kay-Dee."
 Kay-Dee—See K-D Mfg. Co.
 King Pressed Steel & Mfg. Co., Boston, Mass.
 Larson Tool & Stamping Co., Olive St., Attleboro, Mass.
 Lightnin—See Parkhurst & Co.
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Hi-Speed." (See page 975.)
 Mapson Mfg. Co.—See Jonas, C. N. & F. W.
 MacKenzie-Waterhouse Co., 328 Transportation Bldg., Chicago, Ill. "Day's Workrite."
 Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Never-Slip—See Staff, J. Wadsworth.
 Parkhurst & Co., H. G., 180 N. Dearborn St., Chicago, Ill. "Lightnin."
 Perfection—See Jonas, C. N. & F. W.
 Porter Inc.—See Jonas, C. N. & F. W.
 Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Humboldt."
 Schnabel Co., Henry M., 27-31 Lake Ave., Greenwich, Conn. "Abel."
 Service Station Equipment Co.—See Fairbanks Co.
 Stadco—See Stadeker Metal Specialty Co.
 Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
 Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo. "Universal."
 Universal—See Sunnen Products Co.
 Wayland Specialty Mfg. Co., Wayland, N. Y. "Fitz-Awl."
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)

TOOLS, Valve Reseating or Facing

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing poppet valves)

Albertson & Co.—See Jonas, C. N. & F. W.
 American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for "Sioux" Tools.) (See page 243.)

Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
 Bean—See Liberty Metal Products Co.
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Brooks Mfg. Co., J. W., 16 Mt. Joy Pl., New Rochelle, N. Y. "Economic."
 Cone—See J B S Mfg. Co.
 Dunham Co., D. F., 331 Fourth St., Oxnard, Cal. "Simplicity." (See page 483.)
 Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)
 Economic—See Brooks Mfg. Co.
 Fosnacht—See National Auto Specialty Co.
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 227.)
 Halburn Co., 317 W. Pico St., Los Angeles, Cal.
 Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 1007.)
 J B S Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y. "Cone."
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia. "Sioux.")
 Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."
 Lipe, R. M., 230 Alameda Ave., San Jose, Cal.
 National Auto Specialty Co., Tama, Ia. "Fosnacht."
 Payson Mfg. Co., Milan, Ill.
 Peoria—See Auto Mechanics Tool Co.
 Quinn—See Mullarky, G. E.
 Sargent, James M., Grantville, Mass.
 Savidge Co.—See Eclipse Mfg. Co.
 Simplicity—See Dunham Co., D. F.
 Simplicity—See Universal Equipment & Supply Co.
 Sioux—See Jonas, C. N. & F. W.
 Skinner Co., M. B., 562 W. Washington Blvd., Chicago, Ill.
 Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 975.)

TOOLS, Valve Reseating or Facing, for Fords

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing valves)

Albertson & Co.—See Jonas Co.
 American—See Fairbanks Co.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for "Sioux" Tools.) (See page 243.)
 Bean—See Liberty Metal Products Co.
 Detroit Garage Equipment Co., 408 E. Jefferson Ave., Detroit, Mich.
 Dixie—See Tuthill Sales Co.
 Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Efemco—See Foster, Merriam & Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Service Station Equipment Co., Chicago, Ill. "American.") (See pages 619 to 622.)
 Fosnacht—See National Auto Specialty Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.

Everything is listed under the NOUN or principal word

H. E. REIGHARD OIL CO.

Marketers and Jobbers
**PETROLEUM
AND ITS
PRODUCTS**

**CRUDELINE
MOTOR OIL**

"The Particular Oil for
the Particular Motor"

929 24th St., Altoona, Penn.

Announcing

the Production of a New

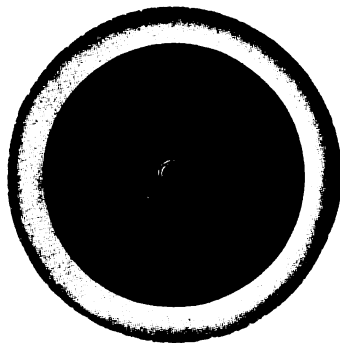
Motorcycle Battery

with solid electrolyte
and a practically
unbreakable jar. A
size for each motor-
cycle. Attractive
discount to dealers

D-G Storage Battery Co.

2029-37 Indiana Ave., Chicago, Ill.

Ready For Deliveries



SMITH WOODISK WHEELS

are made up of various layers of laminated wood, the grain of which runs in different directions—the principle being that now common in airplane construction.

Smith Woodisk Wheels have all the strength of the steel disk wheel, but are more elastic, better shock absorbers and therefore quieter in operation.

Smith Woodisk Wheels are as light as wire wheels, just as sturdy in resisting side stresses; require no special hub nor is it necessary to carry an entire spare wheel; they do not warp, twist or squeak.

Smith Woodisk Wheels are infinitely stronger than the wood spoke wheels; impervious to moisture, add to the beauty of the car, are easily mounted and demounted and tires are inflated from the front without difficulty.

For Passenger Cars and Trucks

Send for Booklet

George W. Smith & Company, Inc.

PHILADELPHIA, PA.

**TOOLS, Valve Reseating or Facing,
for Fords (Continued)**

Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 1007.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Ia. "Sioux.")

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

National Auto Specialty Co., Tama, Iowa. "Fosnacht."

Noonan Mfg. Co., D. R., Paris, Ill.

Payson Mfg. Co., Milan, Ill.

Savidge Co.—See Eclipse Mfg. Co.

Service Station Equipment Co.—See Fairbanks Co.

Sioux—See Jonas, C. N. & F. W.

Southern Machine & Tool Co.—See Tuthill Sales Co.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stevens & Co., 378 Broadway, New York, N. Y. (See page 201.)

Tuthill Sales Co., St. Louis, Mo. (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo. "Dixie.") (See page 641.)

Uniq—See Spiro Mfg. Co.

Wilson, K. R., 10-16 Look St., Buffalo, N. Y. (See page 247.)

**TOOLS, VALVE RETHREADING—See
Tools, Tire Valve Rethreading****TOOLS, VULCANIZING—See Tools, Tire
Vulcanizing****TOOLS, WHEEL TRUEING—See Dressers,
Emery Wheel****TOOLS, Wire Terminal Forming**

American Bosch Magneto Corp., (Brightwood) Springfield, Mass.

Luke-Erb Mfg. Co., 405 E. Fourth St., New York, N. Y. (See page 981.)

**TOOTH CHAMFERING MACHINES—See
Machines, Gear Tooth Chamfering****TOOTHING MACHINES, AIRCRAFT PRO-
PELLER—See Machines, Aircraft Pro-
peller Tothing****TOP BOW CLAMPS FOR FORDS—See
Clamps, Top Bow****TOP BOW DRESSING MACHINES—See
Machines, Top Bow Dressing****TOP BOW CLAMPS—See Holders, Top****TOP BOW SOCKETS—See Sockets, Bow****TOP BOWS—See Bows, Tops****TOP CLAMPS—See Holders, Top****TOP CLAMPS FOR FORDS—See Clamps,
Top Bow****TOP CONVERTORS FOR FORDS—See
Converters, Top****TOP COVERS—See Covers, Top****TOP CURTAIN POCKETS FOR FORDS—
See Pockets, Top Curtain****TOP CURTAINS—See Curtains, Special
Top****TOP DRESSING—See Dressing, Leather;
also Dressing, Mohair****TOP ENVELOPES—See Covers, Top****TOP FABRICS—See Cloth; also Leather****TOP FIXTURES—See Fasteners, Curtain;
also Fittings, Top; also Irons, Body; also
Irons, Slat; also Rests, Bow; also Separ-
ators, Bow; also Sockets, Bow****TOP HOLDERS—See Holders, Top****TOP HOLDERS FOR FORDS—See Clamps,
Top Bow****TOP IRONS—See Irons, Body****TOP LINING DYE—See Dye, Top Lining****TOP PATCHES—See Patches, Top****TOP REPAIR CEMENT—See Cement, Top
Repair****TOP STRAPS—See Straps, Leather****TOP VISORS—See Visors, Top****TOPS, Automobile**

(Including cape tops and demountable or winter tops of all kinds)

A-W—See Adams-Williams Mfg. Corp.

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.

Accurate Cover Co., 373 Canal St., New York, N. Y.

Acme Auto Top Co., 1421 Irving St., N. W., Washington, D. C.

Adams-Williams Mfg. Corp., 351 W. 52d St., New York, N. Y. "A-W."

Albright Co., S. S., 13th & U Sts., Sacramento, Cal.

All-Season Top Co., 4403 St. Aubin Ave., Detroit, Mich.

Allweather Top Co., 654 Carnegie Ave., Cleveland, O.

Alper Auto Top Co., 31 Willow St., Waterbury, Conn.

American Auto Trimming Co., 878 E. 72d St., Cleveland, O.

Anchor Top & Body Co., 2000 South St., Cincinnati, O. (See page 1003.)

Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.

Artcraft—See General Top Co.

Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.

Auto Cape Top Co., 2334-38 S. Michigan Ave., Chicago, Ill.

Auto Leather Goods Co., 11876 Linden Ave., Stratford, Conn.

Everything is listed under the NOUN or principal word

UNIVERSAL Electrical Terminal CONNECTOR

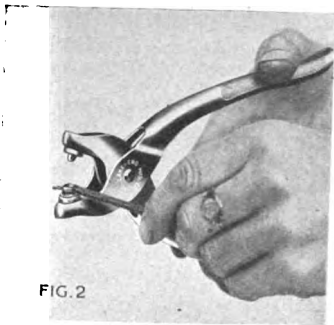


FIG. 2

Patent Pending

A long felt want in Auto Repair Shops—Garages—Ignition Repair Shops—and Factories. A very simple, economical and efficient tool for rapid application of terminals on automobiles—motorcycles—tractors—motorboats—and many other mechanical devices on which ignition wires are necessary.

Model No. 230 carries post sizes to 7/32"

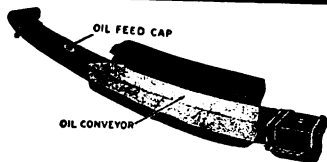
Model No. 130 carries post sizes to 5/32"

Model No. 330 carries post sizes to 9/32"

Model No. 430 carries post sizes to 11/32"

LAKE-ERB MFG. CO., Inc.

465 East Fourth Street New York, N. Y.



Oil The Springs

Cover, protect and lubricate the moving spring leaves from mud, dirt, rust.

Make it possible for the spring to absorb its share of shock burden.

Tire life is lengthened by the Jeavons patented lubricator, squeak is eliminated, riding comfort is increased.

To order successfully give name of car, year, model, style, type of car.

Use Jeavonoil with your Jeavonrizers

JEAVONS

SPRING LUBRICATOR

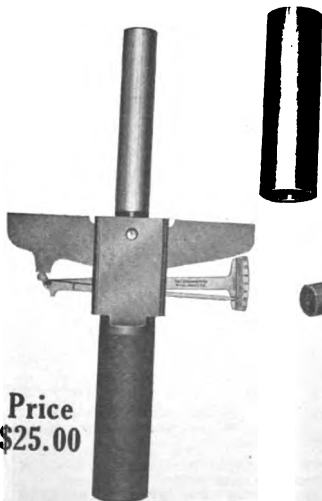
1607 Prospect Ave.

Cleveland

Miller Tool & Manufacturing Co.

1725 16th Street Detroit, Michigan

Piston Cross Bore Indicator



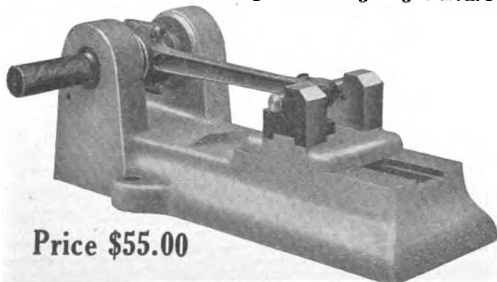
Price
\$25.00

We are the Official Service Station
Tool Manufacturers for Dodge
Brothers and Studebaker Cars

All size Socket Wrenches from 1/4 to 1 1/2 inches
and Universal Socket Wrenches

Write for Catalog

Universal Connecting Rod Aligning Fixture



Price \$55.00

Please mention The Automobile Trade Directory

TOPS, Automobile (Continued)

- Badger—See McAvoy Bros. & Co.
 Baltimore Buggy Top Co., 107-13 W. Mt. Royal Ave., Baltimore, Md.
 Barton Auto Top Co., 4445 Woodward Ave., Detroit, Mich.
 Birmingham Auto Top Co., 305 S. 29th St., Birmingham, Ala.
 Bison Trimming Co., 1185 Jefferson St., Buffalo, N. Y.
 Blasier-Sanborn Mfg. Co., 335 Columbia St., Utica, N. Y.
 Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.
 Boston Auto Top Co., 98-100 Massachusetts Ave., Boston, Mass.
 Brackbill, Chas., 2419 N. Broad St., Philadelphia, Pa.
 Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.
 Briscoe Motor Corp., Jackson, Mich.
 Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
 Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 983.)
 C-Den—See Comfort Cushion Co.
 Central Auto Top & Leather Co., 419 1/2 N. Capitol Blvd., Indianapolis, Ind. "Swo-Car-Mar."
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Auto Top Co.—See Frankel Specialties Corp.
 Chanslor & Lyon Top Co., 1308 S. Grand Ave., Los Angeles, Cal.
 Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.
 Chicago Carriage & Trimming Co., 3514-20 S. Michigan Ave., Chicago, Ill.
 Chicago Coach & Carriage Co., 1235-31 S. Michigan Ave., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Columbia Tire & Top Co., 922 Commonwealth Ave., Boston, Mass.
 Comfort Cushion Co., 1629 Germantown Ave., Philadelphia, Pa. "C-Den."
 Continental Auto Top Mfg. Co., 2900 Washington Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Copp Co., George W., 14th St., & Van Alst Ave., Long Island City, N. Y. (Also Eastern Distributors for "Anchor" Tops.) (See page 983.)
 Cream City Trimming Co., 57-71 Juneau Ave., Milwaukee, Wis.
 Dallas Buggy Top Co., 563 Main St., Dallas, Tex.
 De Luxe—See Kalamazoo Sedan Co.
 Detroit Weatherproof Body Co., Corunna, Mich.
 Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.
 Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.
 Empire Auto Top Co., 222-26 N. 21st St., Philadelphia, Pa.
 Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
 Erdman-Gulder Co., 2290 Woodward Ave., Detroit, Mich. (See page 407.)
 Fehring Carriage Co., 801-09 Third St., Columbus, Ind.
 Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.
 Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York.)
 Gabel Co., A. H., Goodman St. & Monroe Ave., Rochester, N. Y. (See page 983.)
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Geco—See Glover Equipment Co.
 Genesee Mfg. Co., 516-13 Harrison St., Flint, Mich.
 General Top Co., 4310 St. Clair Ave., Cleveland, O. "Artcraft." (See page 985.)
 Gillig—See Harvey Top & Body Co.
 Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."
 Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.
 Hartman-Townsend Co., 14th & West Sts., Indianapolis, Ind.
 Harvey Top & Body Co., 918-20 Main St., Buffalo, N. Y. "Gillig."
 Hayes & Miller Co., 513-23 E. 57th St., New York, N. Y.
 Herrity Co., E. A., 60 Summer St., Stamford, Conn.
 Holcker-Eilberg Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
 Holden One-Man Top Co., 1776 Broadway, New York, N. Y.
 Hund & Co., H. E., 1208 Fort St., W., Detroit, Mich.
 Huntington Auto Top Works, New York Ave., Huntington, N. Y.
 Indiana Top & Vehicle Co., Laurenceburg, Ind.
 Inland Auto Top Factory, 311 S. Monroe St., Spokane, Wash.
 Johnston Commercial Body Co., Fort Smith, Ark.
 Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.
 Kalamazoo Sedan Co., Kalamazoo, Mich. "De Luxe." (See page 729.)
 Kingsbury-Leahy Co., Albany, N. Y.
 Kintz Service & Mfg. Co., 1035-37 Third Ave., Terre Haute, Ind.
 Kroh Mfg. Co., C. Z., 1312-14 Jackson Ave., Toledo, O.
 La Due Auto Top Co., 1021 Monroe St., Toledo, O.
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Larkins & Co., Geary St. at First Ave., San Francisco, Cal.
 Laroche, J. P., 5918-20 S. Ashland Ave., Chicago, Ill.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo.
 McAvoy Bros. & Co., Racine, Wis. "Badger."
 McCordell & Co., J. R., 395 S. Warren St., Trenton, N. J.
 McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.
 Mann-Aldrich Carriage Co., 1300 Lincoln St., Denver, Colo.
 Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.
 Mills Cabinet Co., Racine Junction, Racine, Wis. "Racine."
 Mobile Top Co., 26 Selden Ave., Detroit, Mich.
 Murray & Co., P. A., Newton, Mass.
 National Auto Top Co., 510 W. Broad St., Richmond, Va.
 Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.

Everything is listed under the NOUN or principal word



Automobile Tops

Ford Roadster Tops.....\$22.10 and up
 Ford Touring Car Tops.....\$27.60 and up
 Touring Car Tops of Other Makes,
 \$40.35 and up

Save one-half the cost of a new top by using our New Auto Top Coverings, made to fit any make or model of Roadster or Touring Car. We make it complete, ready to apply. Anyone can put it on old frame. Prices \$7.45 to \$32.00.

Auto Tops, Seat Covers, Fenders and Other Accessories. Get Our Catalog.

BUOB & SCHEU, 500-510 Webster St., Cincinnati, Ohio

ANCHOR Glass Enclosed Demountable TOPS

Commercial Bodies for Ford Chassis

ANCHOR Taxicab and Livery BODIES

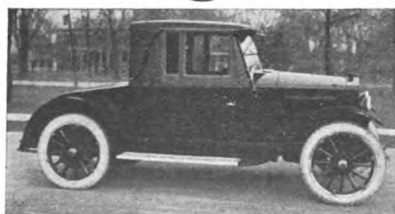
for Dodge, Ford, Chevrolet, Maxwell Overland 4 and Hupmobile Chassis

**COMPLETE AUTO TOP AND BODY EQUIPMENT
 PAINTING, TRIMMING, Etc.**

GEORGE W. COPP CO., Inc.

206-214 Fourteenth Street
 (Between Van Alst & Ely Aves.)

Long Island City, N. Y.



Standardized models for roadster and touring cars for—

Hudson, Essex, Franklin, Chandler, Cleveland, Studebaker, Paige

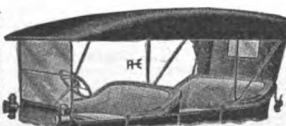
Dealers Send For Catalog

THE A. H. GABEL CO., Inc.
 ROCHESTER, N. Y.

ONE-MAN TOPS

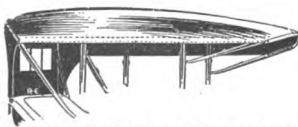
for Fords

Made to fit all Ford Cars in both the standard 32 cu. Ford Rubber and finest grade Domestic Mohair, complete with side curtains to match. Each top comes ready for installation and guaranteed to fit perfectly.



TOP RE-COVERS FOR ALL FORDS

Made in both standard 32 cu. Ford Rubber and best quality Domestic Mohair. The entire Re-Cover, Back Curtain, etc., is finished, complete, ready to tack to the old frame. Easily applied by anyone in a few minutes. Measurements not necessary—simply state model when ordering. Guaranteed to fit. Prices and catalog describing our complete line of Automotive Equipment gladly mailed on request.



THE ROOSE MANUFACTURING COMPANY

827-833 West Main Street
 Louisville Kentucky

Please mention The Automobile Trade Directory

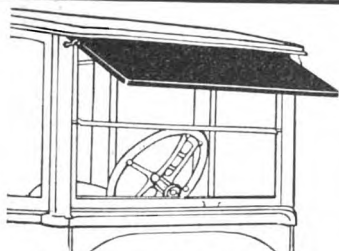
TOPS, Automobile (Continued)

- Peerless Top Co., York St. & Central Ave., Cincinnati, O.
- Perkins-Campbell Co., Cincinnati, O. (See page 118.)
- Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 313.)
- Powers Mfg. Co., Waterloo, Iowa. (See page 581.)
- Production Auto Top Co., 372 Fourth Ave., Long Island City, N. Y.
- R. C. Fabric Co., 1383 Bedford Ave., Brooklyn, N. Y.
- Racine—See Mills Cabinet Co.
- Rearford Top Shop, Clark St., Amesbury, Mass.
- Rex Mfg. Co., Connersville, Ind. (See page 985.)
- Rhodes, W. C., 1611 Vine St., Philadelphia, Pa.
- Roy Top Co., 1842 Michigan Ave., Chicago, Ill. "Victory."
- Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.
- Sargent & Ham Co., 28-32 Scotia St., Boston, Mass.
- Schreiber Carriage Mfg. Co., Charlton, Ia.
- Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 709.)
- Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.
- Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal. (See page 327.)
- Sioux City Auto Top Co., 310 Virginia St., Sioux City, Ia.
- Springfield Auto Top & Upholstery Co., 226 Chestnut St., Springfield, Mass.
- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
- Standard Auto Top & Body Co., 1338 Race St., Philadelphia, Pa.
- Standard Top Co., (Kingston), Wilkes-barre, Pa.
- Steiner, Jos., 409 N. Seventh St., Manitowoc, Wis.
- Sterling Top & Equipment Co., 513-23 W. 57th St., New York, N. Y.
- Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn.
- Swo-Car-Mar—See Central Auto Top & Leather Co.
- Tatco—See Thomas Auto Top Co.
- Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
- Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. (See page 339.)
- Union Top Mfg. Co., 346 Collins Ave., E., E. Pittsburgh, Pa.
- Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.
- Vetter Auto Body Co., 214-16 W. 65th St., New York, N. Y.
- Victory—See Roy Top Co.
- Waynesburg Carriage Co., Waynesburg, O.
- Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.
- Wilcox Co., M. I., Water St., Toledo, O.
- Williams Auto Top Works, O. T., 1107 Seventh St., Wichita Falls, Tex.
- Wilson—See Cincinnati Auto Specialty Co.
- Wright & Co., C. E., Norfolk, Va.
- Accurate Cover Co., 373 Canal St., New York, N. Y.
- Adams-Williams Mfg. Corp., 351 W. 53d St., New York, N. Y. "A-W."
- American Auto Top Co., N. Washington Ave. & Belt R. R., Delphi, Ind. "Faultless."
- Anchor Top & Body Co., 2000 South St., Cincinnati, O. (See page 1008.)
- Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.
- Baltimore Buggy Top Co., 107-19 W. Mt. Royal Ave., Baltimore, Md.
- Brackbill, Charles, 2419 N. Broad St., Philadelphia, Pa.
- Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.
- Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
- Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."
- Cleveland Top & Specialty Co., Carnegie & E. 55th Sts., Cleveland, O.
- Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
- Close-Tite—See Longdin-Brugger Co.
- Continental Auto Top Mfg. Co., 3900 Washington Ave., Chicago, Ill.
- Copp Co., George W., 14th St. & Van Alst Ave., Long Island City, N. Y. (Also Eastern Distributor for "Anchor" Tops.) (See page 983.)
- Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
- De Luxe—See Ero Mfg. Co.
- Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich.
- Detroit Weatherproof Body Co., Corunna, Mich.
- Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "De Luxe." (See page 843.)
- Faultless—See American Auto Top Co.
- Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
- Gordon Co., J. P., 303 N. Fourth St., Columbus, O.
- Goshen Buggy Top Co., Goshen, Ind.
- Harper Buggy Co., Columbia City, Ind.
- Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Surefit."
- Holden One-Man Top Co., 1776 Broadway, New York, N. Y.
- Horstman Auto Top Co., 1923 Prospect Ave., Cleveland, O.
- Koupet Auto Top Co., Belleville, Ill.
- Lamco—See Lehman Mfg. Co.
- Lehman Mfg. Co., 310 Fourth St., Camerton, Ind. "Lamco." (See page 143.)
- Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
- Lockwood Mfg. Co., Kansas City, Mo.
- Longdin-Brugger Co., Second & Macy Sts., Fond du Lac, Wis.
- Miller Auto Top & Body Mfg. Co., Caro, Mich.
- Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
- Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.
- Perkins-Campbell Co., Cincinnati, O. (See page 115.)
- Powers Mfg. Co., Waterloo, Iowa. (See page 581.)
- R-E—See Roose Mfg. Co.
- Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
- Seaman Co., W. S., 486 Virginia St., Milwaukee, Wis.
- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

TOPS, Special and One-Man, for Fords

- A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
- A-W—See Adams-Williams Mfg. Corp.

Everything is listed under the NOUN or principal word



"ALL-WEATHER"

Adjustable Windshield Visor

The most practical equipment ever offered, appealing to every motorist on account of the ease with which it is attached to the car and adjusted to all eye levels and weather conditions.

"All-Weather" Adjustable Windshield Visors made of the most durable materials and are sold with a full guarantee. They are made for all cars, open or closed and, being entirely separate from the windshield, do not interfere with the latter.

Liberal Discounts to the Trade

AUTO VISOR COMPANY

3418 North 18th St. PHILADELPHIA, PA.

Rex

ALL-SEASONS TOP

There is a Rex All-Seasons Top that is specially designed and built for each of the following makes of touring cars and roadsters:

Dodge Brothers, Buick, Studebaker, Reo, Nash, Hudson, Essex, Paige, Lexington, and others.

Shown on new models or applied to automobiles already in service, the Rex All-Seasons Top is proving a source of profitable sales for dealers everywhere.

Rex Manufacturing Company Connersville, Indiana

Manufactured under license in Canada by
Carriage Factories, Ltd. Orillia, Ontario

BADGER

*Seat Covers — Slip Roofs —
Side Curtains — Back Curtains
— With Plate Glass Windows*

The very cream of the world's markets. Unexcelled quality. Astonishingly reasonable prices. Leaders in modernism. Latest improvements. Many exclusive advantages. Widest selection. Superiority firmly established by years of satisfactory service given to thousands of buyers.

Dealers everywhere find every Badger Product a

BIG BUSINESS GETTER

Heavy—steady and ever increasing demand.

Our proposition certain to show you a splendid sales increase.

Write for it to-day.

WISCONSIN TOP CO.

Racine, Wis.



The Artcraft Junior Top

for DODGE CARS

—offers a profitable opportunity for live dealers.

Some very desirable territory is still open.

*Write or wire for the most attractive
offer ever made dealers*

THE GENERAL TOP CO.

4059 St. Clair Avenue CLEVELAND

Please mention The Automobile Trade Directory

TOPS, Special and One-Man, for Fords (Continued)

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Surefit—See Hodes-Zink Mfg. Co.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 127 N. Mulberry St., Muncie, Ind. "Tatco."
 Unico—See Unit Construction Co.
 Van Auken Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.
 Warner Woodworking Co., 284 Moss Ave., Highland Park, Mich.
 Wells & Son, Chas., 4715-19 Cottage Grove Ave., Chicago, Ill.
 Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.
 Whitehall Auto Top Co., 539 Whitehall St., Atlanta, Ga.
 Wilson—See Cincinnati Auto Specialty Co.

TORCHES, Acetylene Brazing and Welding

(Small torch to be attached to acetylene tank used for light brazing and welding.—For Oxy-Acetylene Torches—See Machines, Autogenous Welding)

Hicken Sod-Tor-Lite Co., B. E., Prairie Hill, Mo. "Sod-Tor-Lite."
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.
 St. Paul Welding & Mfg. Co., 174 W. Third St., St. Paul, Minn. "Torit."
 Sod-Tor-Lite—See Hicken Sod-Tor-Lite Co.
 Torit—See St. Paul Welding & Mfg. Co.
 Washburn Burner Corp., Kokomo Dispatch Bldg., Kokomo, Ind.

TORCHES, AUTOGENOUS WELDING—See Machines, Autogenous Welding**TORCHES, OXY-ACETYLENE WELDING—See Machines, Autogenous Welding****TORCHES and FURNACES, Gasoline or Kerosene**

American Stove Co. (Ringin Div.), 825 Chouteau Ave., St. Louis, Mo. "Vesuvius."
 American Stove Co. (Reliable Stove Co. Div.), E. 40th St. & Penna. R. R., Cleveland, O. "Reliable."
 Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 755.)
 Ashton Mfg. Co., 184 Emmet St., Newark, N. J. "Red-Hot."
 Barthel—See Globe Gas Light Co.
 Belfry & Craighead, Tribune Bldg., Chicago, Ill. "Ever-Hot."
 Bernz Co., Otto, 17 Ashland St., Newark, N. J.
 Bolte Mfg. Co., 125-27 E. Racine Ave., Chicago, Ill.
 Carleton Co., 70 Summer St., Boston, Mass.
 Clayton & Lambert Mfg. Co., 10507 Knodell Ave., Detroit, Mich. (See page 1003.)
 Ever-Hot—See Belfry & Craighead.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 610 to 622.)
 Globe Gas Light Co., 27 Union St., Boston, Mass. "Barthel."

Handy Torch Co., 69 Genesee St., Utica, N. Y.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Imp—See Carleton Co.
 Khotal—See Otto Metal Goods Corp.
 Kwikheet—See Gamco Mfg. Co.
 Otto Metal Goods Corp., Wm. H., 401-07 St. Pauls Ave., Jersey City, N. J. "Khotal."
 Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill. "Walters."
 Red-Hot—See Ashton Mfg. Co.
 Reliable—See American Stove Co.
 Turner Brass Works, Sycamore, Ill. (See page 177.)
 Vesuvius—See American Stove Co.
 Volcano Torch & Mfg. Co., 237 E. 23d St., Erie, Pa.
 Wall Mfg. Supply Co., P., 720 Proble Ave., Pittsburgh, Pa.
 Walters—See Quadriga Mfg. Co.

TOTE BOXES—See Boxes, Sheet Metal**TOURING BASKETS—See Hampers, Touring****TOURING TENTS—See Tents, Touring****TOW BARS—See Ropes, Chains and Bars, Tow****TOW CHAINS—See Ropes, Chains and Bars, Tow****TOW HOOKS—See Hooks, Safety Tow****TOW ROPE SHOCK ABSORBERS—See Springs, Tow Rope****TOW ROPE SPRINGS—See Springs, Tow Rope****TOW ROPES—See Ropes, Chains and Bars, Tow****TRACTOR AUTOMATIC QUICK STOP HITCHES—See Hitches, Automatic Quick Stop Tractor****TRACTOR SPARK ARRESTERS—See Arresters, Tractor Spark****TRACTORS—See Section I****TRAFFIC SIGNALS—See Signals, Direction Indicating or Traffic****TRAILER AXLES—See Axles, Special Trailer****TRAILER BRAKE EQUALIZERS—See Equalizers, Trailer Brake****TRAILER CONNECTIONS—See Couplers, Trailer****TRAILER CONNECTORS—See Connectors, Trailer****TRAILER COUPLERS—See Couplers, Trailer**

Everything is listed under the NOUN or principal word

MP Cables for Starting, Lighting and Ignition

PLAIN RUBBER CABLE

No.	Descrip.	Gauge	App. Dia.	Use	App. Weight Per 1000 Ft.	Stranding
MPS-23P	S	14	5mm.	Primary	26 1/2 lbs.	12/26
MPS-25P	"	14	7mm.	Secondary	50 "	12/26
MPS-29P	"	14	9mm.	"	71 "	12/26
MP-16	R	14	7.2mm.	Magneto	61 "	12/26

ARMORED CABLE (Copper Clad)

MP-258	BEA	14	5/32"	Lighting	32 lbs.	37/30
MP-260	"	12	11/64"	"	43 "	65/30
MP-262	"	10	13/64"	"	59 "	104/30
MP-266	2BBA	14	9/32"	Twin Lighting	73 1/2 "	37/30
MP-272	"	12	5/16"	"	105 "	65/30

BRAIDED CABLE

MPS-23-3B	SBB	14	7/32"	Primary & Lighting	22 1/2 lbs.	12/26
MPS-71	SB	16	11/64"	" " "	18 1/2 "	19/29
MPS-73	"	14	13/64"	" " "	19 1/2 "	19/27
MP-10	RBB	14	5.3mm.	Magneto Primary	28 "	37/10
MP-12	RB	14	7.2mm.	Secondary	47 "	12/26
MP-12A	"	14	9.1mm.	"	76 "	12/26
MPS-25B	SB	14	7mm.	Secondary	47 "	12/26
MPS-29B	"	14	9mm.	"	74 "	12/26
MPS-75	"	12	7/32"	Lighting	34 "	19/25
MPS-77	"	8	19/64"	"	46 "	40/26
MPS-79	"	10	17/64"	"	42 "	64/20
MPS-83	2SB	16	23/64"	Twin Lighting	43 "	19/29
MPS-85	"	14	25/64"	"	43 "	19/27

STAGE CABLE

MP-18	2RBB	12	---	Drop Light	---	---
-------	------	----	-----	------------	-----	-----

BRAID AND CAMBRIC CABLE

MP-74	RVB	14	13/64"	Primary & Lighting	24 1/2 lbs.	37/30
MP-76	"	12	7/32"	Lighting	37 "	65/30
MP-78	"	10	17/64"	"	53 "	104/30
MP-86	2RVB	14	25/64"	Twin Lighting	50 "	37/30
MP-88	"	12	27/64"	"	74 "	65/30

STARTING CABLE

MP-50	VVB	00	45/64"	Starting	489 lbs.	334/24
MP-52	"	0	43/64"	"	386 "	259/24
MP-54	"	1	41/64"	"	317 "	209/24
MP-56	"	2	36/64"	"	239 "	164/24
MP-58	"	3	32/64"	"	199 "	133/24
MP-60	"	4	29/64"	"	160 "	108/24
MP-62	"	6	25/64"	"	105 "	168/28

Order by Number

Key—(R) Rubber, (S) Special Rubber Composition, (A) Armored, (V) Varnished Cambric Tape, (B) Braid Coverings, (BB) Double Braid

MP Cable is made of the best material obtainable and is fully guaranteed against defect. Formerly manufactured by Motor Parts Co., of Philadelphia.

Comes in 100 feet coils packed in dust proof package, properly marked. Estimates given for complete car wiring assemblies.

GOODRICH-LENHART MANUFACTURING CO.

HAMBURG, PA.

Also Manufacturers of

Ford Coil Locks
Motor Testing Valves
(Cut-outs)
Ford Brake Shoes

Ford Reinforcing Arm
Ford Gas Tank Covers
Ford Timer
Ford Wiring Assemblies

Ford, Chevrolet 490, and Oakland
Ball Bearings
Ford Radiator Caps
Ford Truss Rods

Please mention The Automobile Trade Directory

TRAILERS, Automobile and Truck

A T C—See Automotive Traller Corp.
 Adams Traller Corp., Garden City, N. Y.
 "Motorbungalow."
 American Truck & Traller Corp., Stoddard Pl., Kankakee, Ill.
 Arcadia Traller Corp., 21 Murray St., Newark, N. Y.
 Automotive Traller Corp., Springfield, Ill.
 "A T C."
 Auto Traller Co., 1322 S. Central Ave., Los Angeles, Cal.
 Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
 B. M. P. C.—See B. P. Mfg. Co.
 B. P. Mfg. Co., Anderson, Ind. "B. M. P. Co."
 Behlen Traller Co., Vine & 15th Sts., Cincinnati, O.
 Bethlehem Motor Corp., 40 E. Walnut St., Allentown, Pa.
 Bower Mfg. Co., Fowler, Ind.
 Byron Engineering Works, Louisville, Ky. (See page 989.)
 Clare Mfg. Co., Clare, Mich.
 Cleveland Traller Mfg. Co., Urbana Rd. & Euclid Ave., Cleveland, O.
 Continental Traller Corp., 3625 Superior St., Detroit, Mich.
 Cook Motors Corp., Kankakee, Ill.
 Curtis Traller Co., 413 W. Broadway, Minneapolis, Minn.
 DeLance Carriage Co., Perry & Gorman Sts., Defiance, O.
 Delker Co., George, Henderson, Ky.
 Detroit Traller Co., 954 East Milwaukee Ave., Detroit, Mich. (See page 989.)
 Diamond Carriage Co., W. 118th St. & Second Ave., Spokane, Wash.
 E. & W. Mfg. Co., Oregon St., Milwaukee, Wis. (See page 683.)
 Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
 Economy Hoist & Body Co., 405 Lexington Ave., New York, N. Y. (Eastern Distributors for Highway Trailers.) (See page 175.)
 Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.
 Emerson-Brantingham Implement Co., S. Independence Ave., Rockford, Ill.
 Feigelson Traller Works, 545 Crockett St., Beaumont, Tex.
 Fix Traller Co., 1400 Cherry St., Detroit, Mich.
 Forsythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo. "King Jack."
 Fruehauf Traller Co., Harper Ave. & D. T. R. R., Detroit, Mich.
 General Woodwork Co., 1235-35 Budd St., Cincinnati, O. "Queen City."
 Glen Wagon & Car Corporation, Cortland, N. Y.
 Graves Co., L. C., Springboro, Pa.
 Harper Buggy Co., Columbia City, Ind.
 Hemling Wagon Works, Meridian, Miss.
 Hercules Buggy Co., Morton Ave., Evansville, Ind.
 Hease Mfg. Co., Leavenworth, Kans. (See page 1003.)
 Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
 Hi-Speed—See Northway Trailercar Co.
 Highway Traller Co., Edgerton, Wis.
 Holland Traller Co., 2031 First St., Detroit, Mich.
 Hoof Bros. Mfg. Co., Plato, Minn.
 Hummell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Highway Trailers.) (See page 493.)

Jackson—See Miles Mfg. Co.
 King Jack—See Forsythe Mfg. Co.
 King Traller Co., 635 S. Main St., Ann Arbor, Mich.
 Kleiber & Co., 11th & Folsom Sts., San Francisco, Cal.
 Komfy-Kamping—See Maxi Traller Co.
 Lapeer Traller Corp.—See Ryan, M. C.
 Laura, John P., 40 S. Monroe St., Coldwater, Mich.
 Lee Traller & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 989.)
 Lion Buggy Co., Cincinnati, O.
 Litehaul—See Puffer-Hubbard Mfg. Co.
 Los Angeles Traller Co., 1328 Palmetto St., Los Angeles, Cal. "Utility."
 Lowell Cutter Co., Lowell, Mich.
 Lynch Mfg. Co., Hammond, Ind.
 Lyons, F. P., 1008 Elm St., Manchester, N. H.
 Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
 Martin Roeking Fifth Wheel Co., F. O. Box 1244 P., Springfield, Mass. (See page 1055.)
 Martin Truck & Body Corp., E. Market St. & Highland Ave., York, Pa.
 Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
 Marx Traller Co., 1145 Quincy St., Los Angeles, Cal. "Komfy Kamping."
 Miami Traller Co., 406 E. Market St., Troy, O.
 Miles Mfg. Co., 351 S. Park St., Jackson, Mich. "Jackson."
 Motorbungalow—See Adams Traller Corp.
 Nepepping Mfg. Corp., Lapeer, Mich.
 New Comer Co., D. A., 1125 Santa Fe Ave., Los Angeles, Cal.
 Northway Trailercar Co., (East Rochester), Rochester, N. Y. "Hi-Speed."
 Ohio Motor Vehicle Co., Oakview Ave. & Nottingham Rd., Cleveland, O.
 Oklahoma Auto Mfg. Co., Okay, Okla.
 Pacific Car & Foundry Co., Alaska Bldg., Seattle, Wash.
 Page Bros. Buggy Co., Marshall, Mich.
 Perfection Traller & Mfg. Co., 1473 W. 110th St., Cleveland, O.
 Pike Automobile & Traller Co., 317 Central Ave., Los Angeles, Cal.
 Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave. S., Minneapolis, Minn. "Litehaul."
 Queen City—See General Woodwork Co.
 Ranger—See Southern Motor Mfg. Association.
 Reedy Auto Truck & Traller Co., 19 E. Archer St., Tulsa, Okla.
 Reliance Traller & Truck Co., 1642-64 Howard St., San Francisco, Cal.
 Rogers Bros. Co., Albion, Pa.
 Royal Machine Co., Cincinnati, O.
 Ryan, M. C., 2807 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Lapeer Traller Corp., Lapeer, Mich.)
 Samson Traller Works, Grand Rapids, Mich. (See page 991.)
 Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
 Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
 Shaver Auto Traller Co., E. Third & Locust Sts., Des Moines, Ia.
 Simplex Short Turn Traller Co., Lago, Ind.
 Sior & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Southern Motor Mfg. Association, Beatty Bldg., Houston, Tex. "Ranger."
 Springfield Commercial Body Co., 335 Liberty St., Springfield, Mass.
 Standard Traller Co., 162 Grant St., Cambridge Springs, Pa.

Everything is listed under the NOUN or principal word

Byron Trailer



Judged by any Standard BYRON TRAILERS are the best on the market, both for the user and the dealer.

Write for literature, specifications and details of available selling territory.

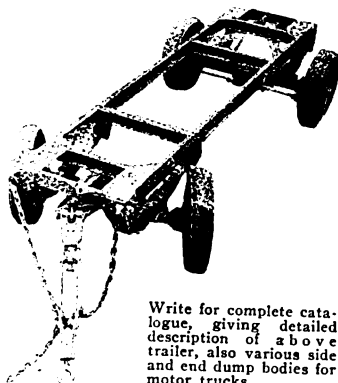
BYRON ENGINEERING WORKS, - Incorporated

General Offices and Factory

Louisville,

Kentucky

LEE TRAILERS



Write for complete catalogue, giving detailed description of above trailer, also various side and end dump bodies for motor trucks.

Manufactured by

LEE TRAILER & BODY COMPANY

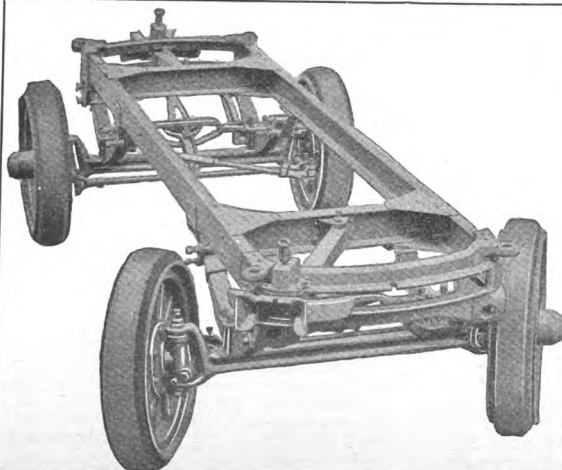
2333 So. La Salle Street
CHICAGO ILLINOIS

DETROIT TRAILER COMPANY

954 EAST MILWAUKEE AVENUE

DETROIT, MICH.

CANADIAN BRANCH DETROIT TRAILER CO. OF CANADA, WALKERVILLE, ONT.



WE are the oldest Exclusive Trailer manufacturers in the world. Our years of experience have taught us how to manufacture a Trailer that will give service. When you buy a Detroit you do not buy an experiment. We have the best line of high grade Trailers on the market.

Dealers get our agency proposition. We have a limited amount of territory still open.

Please mention The Automobile Trade Directory

TRAILERS, Automobile and Truck (Continued)

Stockbridge Body Co., 130 Union St., Springfield, Mass.
 Syracuse Mfg. Co., Syracuse, Ind.
 Texas Wagon Works, 4516 Harrisburg Blvd., Houston, Tex.
 Timpte Bros., 2300 Walnut St., Denver, Colo.
 Trailer Truck Co., Nashotah, Wis.
 Trailmobile Co., 580 E. Fifth St., Cincinnati, O.
 Troy Wagon Works Co., Troy, O.
 Utility—See Los Angeles Trailer Co.
 Victor Motor Truck & Trailer Co., 401 N. Hoyne Ave., Chicago, Ill.
 W-A—See Whetstone & Co.
 Warner Mfg. Co., 31 Main St., Beloit, Wis.
 Watson Products Corp., Canastota, N. Y.
 Wentworth & Irwin, 200 Second St., Portland, Ore.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
 Wolverine Truck-Trailer Co., 119-23 Greeley St., Detroit, Mich.
 Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

TRANSFER PUMPS — See Pumps, Barrel Emptying

TRANSFERS, Decalcomania.

Decalcomania Co., 30 W. Jackson Blvd., Chicago, Ill.
 Globe Decalcomanie Co., 266 Sussex Ave., Newark, N. J.
 Magnet—See Smith-Schiffin Co.
 Meyercord Co., Chamber of Commerce Bldg., Chicago, Ill.
 Motorists Accessories Co., Mansfield, O. (See page 569.)
 National Decalcomania Co., 240 N. 60th St., Philadelphia, Pa.
 Novar—See Palm, Fechteler & Co.
 Palm Bros. Co., 71 Murray St., New York, N. Y.
 Palm, Fechteler & Co., 67 Fifth Ave., New York, N. Y. "Novar."
 Smith-Schiffin Co., 149 Church St., New York, N. Y. "Magnet."

TRANSMISSION ASSEMBLY CLAMPS — See Clamps, Transmission Band Assembling

TRANSMISSION BAND LUGS FOR FORDS — See Lugs, Transmission Band

TRANSMISSION BAND SPRING COM-PRESSING TOOLS FOR FORDS — See Tools, Transmission Band Spring Compressing

TRANSMISSION BAND SPRING CON-NECTING TOOLS FOR FORDS — See Tools, Transmission Band Spring Connecting

TRANSMISSION BANDING FOR FORDS — See Lining, Brake

TRANSMISSION BANDS FOR FORDS — See Bands, Transmission

TRANSMISSION BUSHING REAMERS FOR FORDS — See Reamers, Transmission Bushing

TRANSMISSION DRUM CLAMPS FOR FORDS — See Clamps, Transmission Drum

TRANSMISSION DRUM HOLDERS FOR FORDS — See Holders or Stocks, Transmission Drum

TRANSMISSION DRUM REPAIRING CLAMPS FOR FORDS — See Clamps or Vises, Transmission Drum Repairing

TRANSMISSION DRUM REPAIRING VISES FOR FORDS — See Clamps or Vises, Transmission Drum Repairing

TRANSMISSION DRUM STOCKS FOR FORDS — See Holders or Stocks, Transmission Drum

TRANSMISSION FACINGS — See Lining, Brake

TRANSMISSION GEAR BUSHINGS — See Bushings, Bronze

TRANSMISSION GEARS — See Gears, Transmission

TRANSMISSION LOCKS — See Locks, Transmission

TRANSMISSION SHAFTS — See Shafts, Transmission

TRANSMISSIONS — See Gears, Transmission

TRANSMISSIONS, AUTOMATIC START-ER — See Gears, Automatic Starter Transmission

TRANSMISSIONS, TRACTOR — See Gears, Tractor Transmission

TRANSMITTING ATTACHMENTS — See Attachments, Power Transmitting

TREAD PEELING TOOLS — See Tools, Tire Tread Rolling and Peeling

TREAD ROLLING TOOLS — See Tools, Tire Tread Rolling and Peeling

TREAD STITCHING MACHINES — See Machines, Double Tread Tire Stitching

TREADS OR PROTECTORS, De-tachable Tire

A D-O N-A-Tire—See Miller Rubber Co.
 A. S. B.—See Queen Mfg. Co.
 Bukolt Mfg. Co., Third St., Stevens Point, Wis. "Highway."
 Cummings Traction Tire, 1704 Commonwealth Ave., Boston, Mass.
 Durable—See Gates Rubber Co.
 Ever Last Tread Co., 128 E. New York St., Indianapolis, Ind.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Durable."

Everything is listed under the NOUN or principal word



A GOOD TRAILER

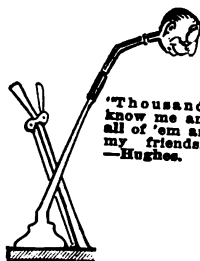
used in connection with a good truck will increase your load carrying capacity from 200 to 300 per cent. Get the facts regarding this Samson Adjustable Pole all steel adjustable Trailer.

SAMSON

ALL STEEL
TRAILER

Write or Wire

SAMSON TRAILER WORKS, Grand Rapids, Michigan



"Thousands know me and all of 'em are my friends."
—Hughes.

Takes the tiresome reach out of driving—brings the lever to the point most convenient for every arm. Hughes (Mellin) adjustable extensions are made for gear shift lever, all cars and for Ford brake-lever gearshift.



PRICES
All cars with removable ball-top lever \$1.50.

Dodge, Nash, Overland (MY5-90-4) \$1.25; all others \$2.00.
Ford 1920 and all Ford closed models (full nickel, black ball) \$2.00; all other Ford \$1.75.

Order from Jobber or direct.

M. & H. NOVELTY COMPANY, Mfrs.
1468 West 28th Street Los Angeles, Calif.



Pacific Coast Distributors
Norton-Munter Co., Seattle & San Francisco



The Bradley

PATENTED

SEMAPHORE

Installed on rear left fender—any make of car.

Tail light, number bracket and semaphore combined in one compact device.

Electrically Operated

from steering post, visible day or night from front and rear.

Jobbers and Dealers

Write for special introductory merchandising offer.

H. E. BRADLEY CO., INC.

Minneapolis, Minn.

SHURSPARC Eliminates All Spark Plug Trouble

Half the pleasure of motoring is denied the motorist who depends only on the usual source of ignition.

Frequent stalling, constant speed shifting in crowded thoroughfares—these are the penalties he pays for inadequate sparking.

But add Shursparc, the remarkable Ignition Auxiliary Device, and all these troubles are forgotten. Shursparc produces a spark that crashes into the



mixture with violent intensity, firing plugs that are fouled and even those that are broken. It increases power and economizes on fuel, not one atom of gas being wasted.

Dealers: We help you make sales by referring inquiries to our agents. Write for exclusive franchise in your locality.

Owners: If your Dealer is out of stock, write direct.

QUINCY & SCHROEDER, Inc.
256 West 69th Street
NEW YORK, N. Y.

Distributor

Middle West — Geo. C. Sells, 19 South Wells St., Chicago, Ill.

SHURSPARC

Distributor

New England — The Elec Co., 6 Beacon St., Boston, Mass.

Please mention The Automobile Trade Directory

TREADS OR PROTECTORS, Detachable Tire (Continued)

Givens Consolidated Rubber Co., Second & Howard Sts., San Francisco, Cal.
 Highway—See Bukolt Mfg. Co.
 Illinois Tire Co., First Nat'l Bank Bldg., Chicago, Ill.
 Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.
 Lion—See Loewenthal Co.
 Loewenthal Co., 947 W. 20th St., Chicago, Ill.
 "Lion."
 Maplebay Mfg. Co., Crookston, Minn.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O. "A D-O N-A-Tire."
 Pacific—See Sturges Tire & Rubber Co.
 Queen Mfg. Co., Webster City, Ia. "A. S. B."
 Savold Tire Co., 5 Columbus Circle, New York, N. Y.
 Sturges Tire & Rubber Co., Oakland, Cal.
 "Pacific."
 Taylor Mfg. Co., 1250 S. West St., Indianapolis, Ind.
 Triple Tread Tire Co., 1442 Michigan Ave., Chicago, Ill.
 Wearproof Tire Products Co., 554 Van Ness Ave., San Francisco, Cal.

TREATING COMPOUNDS—See Compounds, Gasoline Treating

TREATING, Heat

Alco Steel Co., Lincoln, N. J.
 American Die & Tool Co., Reading, Pa. (See page 449.)
 American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 459.)
 American Metal Treatment Co., Elizabeth, N. J. (See page 993.)
 Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
 Bidle Co., W. S., 1411 E. 45th St., Cleveland, O.
 Brooklyn Steel Treating Corp., 8-10 Franklin St., Brooklyn, N. Y.
 Casey-Hudson Co., 341 E. Ohio St., Chicago, Ill. (See pages 805 and 829.)
 Detroit Heat Treating Co., 1701 Bellevue Ave., Detroit, Mich.
 Dittmer Gear & Mfg. Corp., 290 Grand St., Lockport, N. Y.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 909.)
 General Machine Works, Lamour & Prospect Sts., York, Pa.
 General Railway Signal Co., Rochester, N. Y.
 Hartford Machine Screw Co., Hartford, Conn. (See page 829.)
 Kettler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
 Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 455.)
 Milwaukee Heat Treating Co., 651-53 S. Pierce St., Milwaukee, Wis.
 Montgomery Chemical Works, Elmtree & Doremus Sts., Detroit, Mich.
 Myall-Wallace Co., 559-69 W. Lake St., Chicago, Ill.
 Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
 Sanford Mfg. Co., E. C., 2060 Fairfield Ave., Bridgeport, Conn.
 Scott & Fitzer Machine Co., Locust Ave., Cleveland, O.
 Snow Co., Fred. A., 1942 W. Kinzie St., Chicago, Ill.
 Steel Improvement & Forge Co., 5008 Windsor Ave., Cleveland, O.
 Turner Novelty Co., John C., Dayton, O.
 Vincent Steel Process Co., 3131 Bellevue Ave., Detroit, Mich.
 Wesley Steel Treating Co., 651-53 S. Pierce St., Milwaukee, Wis.
 Williams & Co., J. H., 88 Richard St., Brooklyn, N. Y. (See page 1073.)
 Wyman-Gordon, Worcester, Mass.
 (See Back Bone.)

TRESTLES AND TRUCKS—See Horses, Trestles and Trucks

TRIMMERS, BATTERY POST—See Tools, Storage Battery Repair

TRIMMERS' CLIPS—See Clips, Trimmers'

TRIMMERS' PASTE—See Paste, Trimmers'

TRIMMINGS, Cloth and Carpet

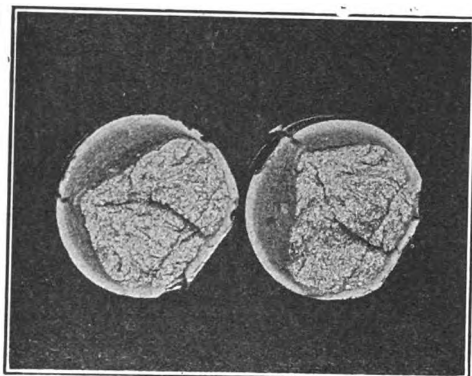
(See also Broadcloth, also Buttons; also Carpet; also Cloth; also Lace; also Linoleum; also Silk; also Whipcord)

Albrecht Co., H. E., 1234 Broadway, New York, N. Y.
 Alf Co., Edward F., 430 E. Eighth St., Cincinnati, O.
 Barrell Co. of New York, Wm. L., 50 Leonard St., New York, N. Y.
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 257.)
 Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 165.)
 Carr Co., F. S., 31 Beach St., Boston, Mass.
 "Carrocloth."
 Carrocloth—See Carr Co.
 Chase & Co., L. C., 89 Franklin St., Boston, Mass.
 Duncan Co., W. H., 70-72 Worth St., New York, N. Y.
 Dusenbury & Co., Louis, 229 Fourth Ave., New York, N. Y. (See page 983.)
 Galland, Wechmar & Co., 456 Fourth Ave., New York, N. Y.
 Haarts, J. C., 10 High St., Boston, Mass.
 Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 255 and 309.)
 Landers Bros. Co., Dept. A. 2, Toledo, O. (See page 1049.)
 Lounsbury & Sons, G. H., 107-09 W. Third St., Cincinnati, O.
 Patterson & Greenough, 45 E. 17th St., New York, N. Y.
 Roehm & Davison, 353 W. Woodbridge St., Detroit, Mich.
 Soherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
 Sherwood, A. S., 253 W. 54th St., New York, N. Y.
 Shirley Corp., 250 W. 54th St., New York, N. Y. "Wearwell."
 Sloane, W. & J., 575 Fifth Ave., New York, N. Y. (See pages 199 and 585.)
 Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 Thurbis—See Thurnauer & Co.
 Thurnauer & Co., J. C., 254 Fourth Ave., New York, N. Y. "Thurbis."
 Tiel & Co., Geo., 1236 Race St., Philadelphia, Pa.

Everything is listed under the NOUN or principal word

OUR SPECIALTIES:—

Case Hardening, Hardening, Annealing, Tempering,
"Carbonia," or Gun Metal Finish



Will Mail Booklet for the Asking

WE TREAT
Adding Machine
Parts
Gears
Machine Tool
Spindles
Screw Machine
Products
Stampings
Wrist Pins and
Sleeves
Chain
And Parts for
Automobiles,
Tractors,
Aeroplanes,
Motorcycles
and Motorboats

AMERICAN METAL TREATMENT CO.

ELIZABETH, N. J.



Fabrics identified with the famous
Period decorative motifs for the
more artistic upholstering of dis-
tinctive motor cars.

LOUIS DUSENBURY & COMPANY

INC.

229 Fourth Avenue
New York City

Please mention The Automobile Trade Directory .

TRIMMINGS, Cloth and Carpet
(Continued)

Warden Co., Geo. J., 6530-34 Carnegie Ave.,
Cleveland, O.
Wearwell—See Shirley Corp.
Wiese & Co., Wm., 324 W. 56th St., New York,
N. Y.
Worumbo Co., 324 Fourth Ave., New York,
N. Y.

TRIMMINGS, Metal

(See also Fasteners, Curbs; also Fittings, Top; also
Fittings, Drop; also Handles, Door; also Hinges,
Door; also Locks, Door; also Irons, Flat; also
Irons, Body; also Mouldings, Brass; also Rests,
Bow; also Separators, Bow)

Aetna Brass & Bronze Co., 1631-35 E. 55th
St., Cleveland, O.
Amesbury Brass & Foundry Co., Amesbury,
Mass.
Attwood Brass Works, Grand Rapids,
Mich. (See page 479.)
Cowles & Co., C., New Haven, Conn.
Douglas & Lomason Co., 5836 Lincoln Ave.,
Detroit, Mich.
E. V. B. Mfg. Co., 343 York St., New Haven,
Conn.
English & Mersick Co., New Haven, Conn.
(See page 571.)
Enterprise Brass & Plating Co., Sixth & Bay-
miller Sts., Cincinnati, O.
Imperial Brass Mfg. Co., 1234 W. Har-
rison St., Chicago, Ill. (See page 177.)
Metal Stamping Co., 13th St. & East Ave.,
Long Island City, N. Y.
Monarch Carriage Goods Co., Marshall &
Spring Grove Ave., Cincinnati, O.
(See page 399.)
Phoenix Lock Works, 321-27 Third Ave., New-
ark, N. J.
Sherwood, A. S., 258 W. 54th St., New York,
N. Y.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd.,
Detroit, Mich.
Taylor Co., H. D., 99-115 Oak St., Buffalo,
N. Y.
Western Brass Mfg. Works, Marshall
Blvd. & 21st St., Chicago, Ill.
(See page 263.)
White Mfg. Co., 155 Cannon St., Bridgeport,
Conn.
Wing Co., Charles, Amesbury, Mass.
(See page 873.)
Woodruff & Sons Co., Walter W., Mount Car-
mel, Conn.

**TRIPLE GEAR RIVETING JIGS FOR
FORDS**—See Jigs, Triple Gear Riveting

TROUBLE CHARTS—See Charts, Electric
Wiring

TROUBLE LIGHTS—See Lamps, Electric,
Hand or Inspection

TRUCK ATTACHMENTS—See Convert-
ers, Chassis

TRUCK BODY GATE FASTENERS—See
Fasteners, Truck Body Gate

TRUCK BODY HOISTS—See Hoists, Truck
Body

TRUCK BODY SUPPORTS—See Supports,
Truck Body

TRUCK CABS—See Cabs, Wood Truck;
also Cabs, Metal Truck

TRUCK CONVERTERS—See Converters,
Chassis

TRUCK CRANES—See Cranes, Truck

TRUCK GUARDS—See Fenders or Guards,
Truck Radiator

TRUCK LOAD INDICATING METERS—
See Meters, Truck Load Indicating

TRUCK LOADERS—See Loaders, Truck

TRUCK RIM APPLYING PRESSES—See
Presses, Truck Rim Applying

TRUCK STAKE POCKETS—See Pockets,
Truck Stake

TRUCK STAKE SOCKETS—See Pockets,
Truck Stake

TRUCK UNITS—See Converters, Chassis

TRUCK WINCHES—See Winches, Truck

**TRUCKS, Acetylene and Oxygen
Tank**

Dayton Display Fixture & Novelty Co., 712-14
E. Monument Ave., Dayton, O. "Presto."
Pioneer Welding Co., 610 E. Main St., Kala-
masco, Mich.
Presto—See Dayton Display Fixture & Nev-
elty Co.

TRUCKS, Body Handling

Equipment Mfg. Co., Warren, O. "Farming-
ton."
Farmington—See Equipment Mfg. Co.
Globe Vise & Truck Co., 1451 Front Ave.
N. W., Grand Rapids, Mich.

**TRUCKS, CASTORS and SPARE
WHEELS, Wrecking**

(For towing in cars with damaged wheels or axles)
Bihler, Albert E., 2219 Howard St., Omaha,
Nebr.
Compo Mfg. Co., Defiance, O.
Continental Auto Parts Co., 1807 E. 17th
St., Columbus, Ind. (See page 79.)
E. & S.—See J B S Mfg. Co.
Echo Motor Co., Tonawanda, N. Y.
Guss Co., O. G., Delphos, O.
Holmes & Bros., Robt., 30 N. Hazel Ave.,
Danville, Ill.
Holmes Co., Ernest, Chattanooga, Tenn.
*J B S Mfg. Co., Merchants National Bk. Bldg.,
Elmira, N. Y. "E. & S."
Jonas, C. N. & F. W., 608 S. Dearborn St.,
Chicago, Ill. (Sales Representatives for
Simplicity Products Mfg. Co., Milwaukee,
Wis.)
Lawson—See Menasha Wood Split Pulley Co.
Masco—See Milwaukee Auto Specialty Co.
Menasha Wood Split Pulley Co., 674 Tayco
St., Menasha, Wis. "Lawson."

Everything is listed under the NOUN or principal word

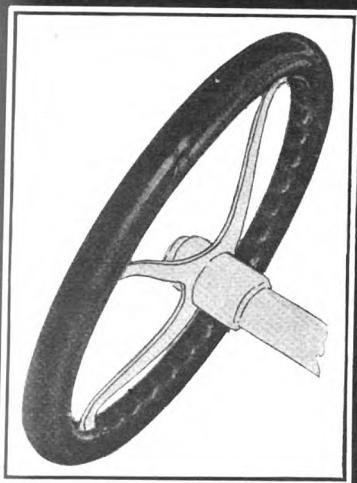
LA PIERRE

STEERING WHEELS

Inserted or Screwed on Spiders

Also

STEERING WHEEL RIMS



In them are found that superior standard of design, high quality of materials, and expert workmanship which insures safety, durability, economy, and service.

Every LA PIERRE Rim and Wheel is conscientiously guaranteed because the LA PIERRE system of inspection gives a perfect knowledge of the product before it leaves the factory.

Specify LA PIERRE and insist on having the genuine.

Established 1890

H. M. ("Dudie") LA PIERRE & CO.

OFFICE
1314-16 W. 21st St.

FACTORY
2015-21 So. Loomis St.

CHICAGO, ILL.

Please mention The Automobile Trade Directory

TRUCKS, CASTORS and SPARE WHEELS, Wrecking (Continued)

Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil."
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Masco."
 Mosher Mfg. Co., 12 E. 57th St., Chicago, Ill.
 Projects Co., East Milton, Mass.
 Red Devil—See Mid-West Mfg. Co.
 Simplicity Products Mfg. Co.—See Jonas C. N. & F. W.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 741.)

TRUCKS, GARAGE WHEEL—See Castors and Wheel Trucks

TRUCKS, OXYGEN TANK—See Trucks, Acetylene and Oxygen Tank

TRUCKS, Repair

(For lying on when making repairs underneath a car)

Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Foster Trucks.) (See page 243.)
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Boyle Mfg. Co., Los Angeles, Cal. (See page 188.)
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Chattanooga Wheelbarrow Co., 1221 E. Main St., Chattanooga, Tenn.
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 E-Z—See Wagner Mfg. Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 243.)
 Fawco—See Faw Co.
 Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Burdy." (See page 407.)
 Foster Bros. Mfg. Co., 811 Broad St., Utica, N. Y.
 French, F. A., Braddock Ave. & Guthrie St., Pittsburgh, Pa. "Getunder."
 Gasco—See General Auto Specialty Co.
 Gem—See Moeschl-Edwards Corrugating Co.
 General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
 Getunder—See French, F. A.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Ideal—See Lewis-Geer Mfg. Co.
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
 K & E—See Kund & Eiben Mfg. Co.
 Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.
 Kund & Eiben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa. "K & E."
 Lewis-Geer Mfg. Co., 800 Railroad St., Ypsilanti, Mich. "Ideal."
 Masco—See Milwaukee Auto Specialty Co.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Masco."
 Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Gem."
 Portland Garage Co., 49-51 Cross St., Portland, Me.
 Springville Wood Specialty Co., Springville, N. Y.

Sturdy—See Ferro Mfg. Co.
 Wagner Mfg. Co., Cedar Rapids, Ia. "E-Z."
 W-A—See Whetstone & Co.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
 Wisconsin Welding & Cutting Co., 556 E. Water St., Milwaukee, Wis.
 Yankee—See International Metal Mfg. Co.
 Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

TRUNK RACKS—See Racks, Trunk

TRUNK STRAPS—See Straps, Leather; also Straps, Web

TRUNKS, BOARD—See Trunks, Leather

TRUNKS, FABRIC—See Trunks, Leather

TRUNKS, Leather, Fabric and Board

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.
 Bailey-Fitwell Co., 1313 S. Grand Ave., Los Angeles, Cal. "Fitwell."
 Belber Trunk & Bag Co., 1641 N. Hancock St., Philadelphia, Pa.
 Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y.
 Farmers Market Co., 711 Orange St., Wilmington, Del.
 Fitwell—See Bailey-Fitwell Co.
 Kamlee—See McKane-Lins Co.
 Kronauer & Co., Chas., 153 N. Desplains St., Chicago, Ill.
 Likly & Rockett Trunk Co., 1865 Euclid Ave., Cleveland, O.
 McDonald, Alexander, 15 Beacon St., Boston, Mass.
 McKane-Lins Co., Milwaukee, Wis. "Kamlee." (See page 897.)
 Sage's Trunk & Leather Goods Co., 10 Washington St., N., Boston, Mass.
 Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
 Stallman, F. A., 57 E. Spring St., Columbus, O.
 Taylor Trunk Works, C. A., 678 N. Halsted St., Chicago, Ill.
 Tuttle & Clark, 33 E. Jefferson St., Detroit, Mich.
 United Auto Trunk Co., W. 26th St., New York, N. Y.
 Winship, W. W., 71 Summer St., Boston, Mass.

TRUNKS, Metal

Warnock & Co., Wm., Sioux City, Ia.

TRUNKS, TIRE—See Trunks, Leather; also Trunks, Metal

TRUSS RODS FOR FORDS—See Ends, Rear Axle Truss

TRUSSES, REAR AXLE, FOR FORDS—See Rods, Rear Axle Truss

TUBE BAGS—See Covers, Spare Tire

Everything is listed under the NOUN or principal word

KAMLEE AUTO TRUNKS

Rain-Proof—Rust-Proof—Dust-Proof

Patented

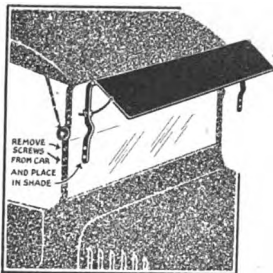
Trunks Made for all Cars

We specialize on Marmon, Cadillac, Pierce-Arrow, Packard, Franklin

Manufactured by

McKANE-LINS CO., Milwaukee, Wisconsin

Dealers Write for Discount



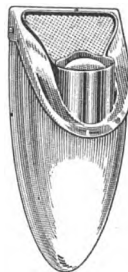
Two Quick-Selling Automobile Accessories

NO-GLARE SHADE FOR ALL CARS

This new, patented Shade eliminates the blinding glare of headlights and of the sun and insures clear vision in rain, fog and snow. Attached in two minutes. Can be adjusted at any angle from the driver's seat. Does not interfere with windshield.

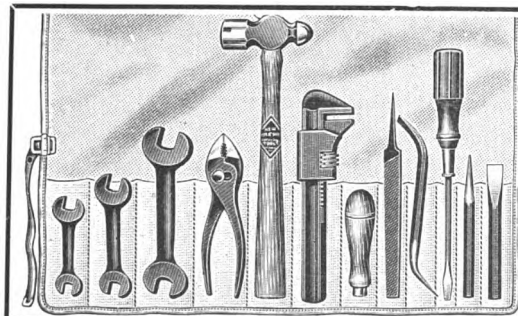
AUTO ASH RECEPTACLE

Prevents ashes from being blown into the driver's eyes. Avoids accidents and injury to passengers' clothes and to upholstery. Keeps cigars, burnt match ends and ashes away from the floor of the car. Ornamental, safe, simple and sanitary. Easy to attach; easy to empty.



Liberal Discounts to the Trade

THE O. MAURER COMPANY 1317 Bushwick Ave. BROOKLYN, N. Y.



"STERLING" TOOL KITS

For Automobiles, Trucks and Tractors

MADE TO ANY SPECIFICATIONS

Send us your specifications for quotation and samples

STERLING PRODUCTS CO., Inc.

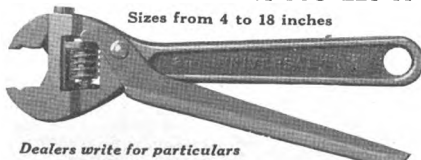
35 S. Desplaines St., CHICAGO

Universal Lever Adjustable Wrench

"IT CAN'T LET GO TILL YOU LET IT"

Sizes from 4 to 18 inches

The jaws are slotted laterally to fit corner of nut



A heavy duty spring opens jaw to position when lever is released

Dealers write for particulars

3067 E. Grand Blvd.
Detroit, Mich.

UNIVERSAL WRENCH COMPANY

Canadian Factory
Windsor, Ont.

Please mention The Automobile Trade Directory

TUBE CASES—See Covers, Spare Tire

TUBE DEFLATORS—See Machine, Tube
Deflating and Valve Removing

TUBE EXPANDERS—See Expanders, Boiler

TUBE MANDRELS—See Mandrels, Inner
Tube

TUBE PATCHES—See Patches, Tire Repair

TUBE PATCHING BUFFERS—See Buffers,
Tube Patching

TUBE SPLICING MANDREL CLAMPS—
See Clamps, Tube Splicing Mandrel

TUBE TESTING TANKS—See Tanks, Inner
Tube Testing

TUBE VALVES, OIL FOR FORDS—See
Valves, Oil Tube

TUBES, Inner

(For Outer Casings or Shoes—See Tires, Pneu-
matic)

Achilles Rubber & Tire Co., Binghamton, N. Y.

Acme Rubber Mfg. Co., Trenton, N. J.

Air Container Co., 40 Court St., Boston, Mass.

Ajax Rubber Co., New York, N. Y.

(See page 955.)

Allen Tire & Rubber Co., 510 Hamilton St.,
Allentown, Pa.

Allsteel Ridewell Tire & Rubber Co., Lindsey
Bldg., Dayton, O. "Artyr."

Amazon Rubber Co., Akron, O.

American—See Mansfield Tire & Rubber Co.

American Auto Accessories Co., 323 S. Michi-
gan Ave., Chicago, Ill. "Brown."

American Rubber & Tire Co., 100 Beech St.,
Akron, O.

Anchor—See New Jersey Car Spring & Rub-
ber Co.

Apollo Tire & Rubber Co., 3962 E. 93rd St.,
Cleveland, O.

Arabian—See Defiance Tire Factories.

Archer Cord Tire & Rubber Co., 711-17 15th
Ave., N. E., Minneapolis, Minn.

Ardmore Akron Tire & Rubber Co., Hers-
kowitz Bldg., Oklahoma City, Okla.

Armstrong Rubber Co., Garfield, N. J.

Artyr—See Allsteel Ridewell Tire & Rubber
Co.

Ashland Tire & Rubber Co., Clark Ave. & E.
Elighth St., Ashland, O. "Stalwart."

Auburn—See Double Fabric Tire Co.

Auto-Seal—See Shaw Tire Co.

Auto Tire Sales Co., 1340-48 Michigan
Ave., Chicago, Ill. "Lyon."
(See page 137.)

Axiom—See Surety Tire & Rubber Co.

Batavia Rubber Co., Batavia, N. Y.

Beacon Tire Co., Main & River Sts., Beacon,
N. Y.

Bergen Rubber Co., 40-42 Paterson Ave., East
Rutherford, N. J.

Bergougnan Rubber Corp., 2000 E. State St.,
Trenton, N. J.

Best—See Veghte, Harry V.

Blitwell Tire & Rubber Co., Akron, O.

Black Hawk Tire & Rubber Co., Des Moines,
Iowa.

Black Stripe—See Rubber Products Corp.

Blekree Tire & Rubber Co., St. Paul, Minn.
(See page 967.)

Boska—See Standard Tire Filler Co.

Bowers Rubber Works, 62-70 Sacramento St.,
San Francisco, Cal.

Bowling Green Rubber Co., 1203 Prospect Ave.,
Toledo, O.

Braender Rubber & Tire Co., Ruther-
ford, N. J. (See page 963.)

Bricton Mfg. Co., 14th & Farnum Sts.,
Omaha, Nebr.

Brown—See American Auto Accessories Co.

Brunswick-Balke-Collender Co., 623-33 S.
Wabash Ave., Chicago, Ill.

Buckskin—See Tuscan Tire & Rubber Co.

Bucyrus—See Henderson Tire & Rubber Co.

Burdick Tire & Rubber Co., Noblesville, Ind.

C C C—See Canton Rubber Works.

Canton Rubber Works, 209 Washington St.,
Canton, Mass. "C C C."

Capitol—See National Tire & Rubber Co.

Carlisle Tire & Rubber Co., Carlisle, Pa. "Car-
mojon."

Carmojon—See Carlisle Tire & Rubber Co.

Carspring—See New Jersey Car Spring &
Rubber Co.

Century-Plainfield Tire Co., Plainfield, N. J.

Century Rubber Works, 1846 Rawson St., Chi-
cago, Ill.

Champion—See McLean Tire & Rubber Co.

Channon Co., H., 150 N. Market St., Chicago,
Ill. "Gripwell."

Chester Rubber Tire & Tube Co., Chester, W.
Va.

Chicago Rubber Clothing Co., 1501 Albert St.,
Racine, Wis. "O'Claire."

Climax—See Zee-Zee Rubber Co.

Climax Rubber Co., 21 W. Gay St., Colum-
bus, O. "Maxo." (See page 989.)

Clingstone—See Lancaster Tire & Rubber Co.

Coast Tire & Rubber Co., 48th Ave. & 12th
St., Oakland, Cal.

Collins Puncture-Proof Tube Co., Hackensack,
N. J.

Columbia Tire & Rubber Co., Elm & Railroad
St., Columbiana, O. "Para-Bell."

Columbus Tire & Rubber Co., 555 W. Goodale
St., Columbus, O.

Combination Rubber Mfg. Co., Bloomfield,
N. J. "Eagle."

Conestoga Tire & Rubber Co., 46 N. Prince
St., Lancaster, Pa.

Continental Rubber Works, 1903 Liberty St.,
Erie, Pa. "Vitalic."

Converse Rubber Shoe Co., Malden, Mass.
"Tuft-E-Nuff."

Corduoy—See Grand Rapids Tire & Rubber
Corp.

Cornhusker—See Nebraska Tire & Rubber Co.

Corona Cord Tire Co. (E. Butler), Butler, Pa.
"Coronada."

Corona Rubber Mfg. Co., Rittenhouse &
Osceola Sts., Philadelphia, Pa.

Coronada—See Corona Cord Tire Co.

Cortland Tire & Rubber Co., 343 Cortland St.,
Belleville, N. J.

Crown Tire & Rubber Co., Ralston, Neb.

Cumberland Tire & Rubber Co., 26th & Court-
ney Sts., Louisville, Ky.

Cupples Co., Seventh & Spruce Sts., St. Louis,
Mo. "Rhinos."

Currie Bros. Co., Atlanta, Ga. "Tireo-
meter." (See page 963.)

Defiance Tire Factories, 426 Randolph St.,
Chicago, Ill. "Arabian."

Everything is listed under the NOUN or principal word

MADE BY SPECIALISTS

THE CLIMAX

Line of RUBBER GOODS

Signifies **Highest Grade Materials**
and **Workmanship**. Our Guarantee
Protects **YOU** and **YOUR TRADE**

Good TIRE SERVICE Assured

when used in connection with either —
CLIMAX PLAIN INNER TUBES, either
Red, Grey or Natural. **MAXO - TUBES**
(circular molded). **CLIMAX COMPRES-**
SION INNER TUBES or **MAXOTIRES**
which (are not inner liners) but instead
completely encircle the tubes and by means
of our patented locking device, prevent
blowouts, pinches, chaffing and other tire
troubles. **A Card Today** will bring you the
best line of facts obtainable for **Building**
Big Business.

THE CLIMAX RUBBER COMPANY

General Office: 21 W. Gay St., Columbus, Ohio

Factory: Delaware, Ohio

TUBES, Inner (Continued)

Dellon Tire & Rubber Co., Baltimore, Md.
(See page 963.)

De Luxe—See Thermoid Rubber Co.

Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."

Diamond Rubber Co., Akron, O.

Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.

Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Auburn."

Dowse Rubber Co., 123 S. Michigan Ave., Chicago, Ill.

Dry Climate Tire Mfg. Co., Arvada, Colo. "Vadacol."

Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.

Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y.

Dural Rubber Corp., Maple Ave., Flemington, N. J.

Eagle—See Combination Rubber Mfg. Co.

Eagle Rubber Co., Bloomfield, N. J.

Eckrode Rubber Co., 1-22 Adams St., Newark, N. J.

Ehman Tire & Rubber Co., 176 N. Michigan Ave., Chicago, Ill.

Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Erie Tire & Rubber Co., First St., Sandusky, O.

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Eternal—See Midland Tire & Rubber Co.

Evergreen—See Falls Rubber Co.

Excel Rubber Co., 116 Broad St., Wadsworth, O. "X-L."

Falls Rubber Co., Cuyahoga Falls, O. "Evergreen."

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

Flak Rubber Co. of New York, Chicopee Falls, Mass. (See page 969.)

Forster Tire & Rubber Co., Millersburg, O.

Fort Wayne Tire & Rubber Mfg. Co., Peoples Trust Bldg., Fort Wayne, Ind. "Wayne."

G & J Tire Co., Indianapolis, Ind.

Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."

General Tire & Rubber Co., 330 N. 15th St., Philadelphia, Pa.

General Tire & Rubber Co., E. Market St., Akron, O.

Gillette Rubber Co., Eau Claire, Wis.

Glamorgan Tire & Rubber Corp., 72 E. Spring St., Columbus, O.

Globe Rubber Tire Mfg. Co., 1851 Broadway, New York, N. Y.

Goodrich Co., B. F., S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O. (See page 963.)

Gordon Tire & Rubber Co., 1300 Seventh St., S. W., Canton, O.

Grand Rapids Tire & Rubber Corp., Pearl & Ottawa Sts., Grand Rapids, Mich. "Corduroy."

Great Renable Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla. "Sequayale."

Greyhound—See Ideal Tire & Rubber Co.

Gripwell—See Channon Co.

Guage Valve Corp., 217-37 Lake Erie St., Rochester, Ind.

Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.

Handy—See United States Leatheroid & Rubber Co.

Hanes Rubber Co., Winston-Salem, N. C.

Hardman Rubber Corp., New Brunswick, N. J. "Stanwood."

Hartford Rubber Works Co., 1792 Broadway, New York, N. Y.

Hartford Rubber Works Co., Hartford, Conn.

Hawkeye Tire & Rubber Co., 215 E. Third St., Des Moines, Ia.

Haywood—See Zee-Zee Rubber Co.

Henderson Tire & Rubber Co., 23-31 W. 43d St., New York, N. Y. "Eucyrus."

Hercules Rubber Corp., Union Central Life Bldg., Cincinnati, O.

Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.

Highway—See National Tire & Rubber Co.

Holdfast—See Diamond Holdfast Rubber Co.

Home Tire Co., Trenton, N. J.

Hood Rubber Products Co., Watertown, Mass.

Horseahoe—See Racine Auto Tire Co.

Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.

Ideal—See Voorhees Rubber Mfg. Co.

Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."

Independent Airless Tire Co., Cottage & Pacific Sts., Independence, Mo.

India Tire & Rubber Co., Akron, O.

Inland Rubber Co., 146 W. 27th St., Chicago, Ill.

International India Rubber Corp., Ewing Ave. & Vandalla R. R., South Bend, Ind. "South Bend."

Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.

Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.

Johnstone Tire & Rubber Co., La Porte, Ind.

Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill. (Dealers.) (See page 943.)

KelBro—See Kelley Tire Co.

Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."

Kelley Tire & Rubber Co., West Haven, Conn.

Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y. (See page 503.)

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Moomey."

Keystone Tire & Rubber Co., Keystone Bldg., Broadway & 62nd St., New York, N. Y. (See page 959.)

Knox Tire & Rubber Co., Mt. Vernon, O.

Knabenshue Mfg. Co., East Northport, N. Y.

Kokomo Rubber Co., 1042 S. Main St., Kokomo, Ind.

Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingshine."

Last-Well—See Twin Tube & Rubber Co.

Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.

Lee Tire & Rubber Co., 345 W. 55th St., New York, N. Y. "Velvet."

Lehigh Tire & Rubber Co., Newcastle, Pa.

Liberty Tire & Rubber Co., Green Bay, Wis.

Lincoln Highway Tire Co., Fulton, Ill.

Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind. "Lioness."

Lioness—See Lion Tire & Rubber Corp.

London Rubber Co., 906 Forbes St., Pittsburgh, Pa. "Red Devil."

Long-Wear—See Quality Tire & Rubber Co.

Lotex Tire & Rubber Co., Fond du Lac, Wis.

Lyon—See Auto Tire Sales Co.

Everything is listed under the NOUN or principal word



For Air or Water

THE CALIFORNIA AUTOMATIC HOSE REEL

Saves Money, Hose, Time, Labor, Space

SAVES ITSELF

Thousands of satisfied users

Hose lasts for years. Saving in hose replacement alone will repay original cost in a short while.

Price, \$39.00, F. O. B. Factory, Detroit

Jobbers and Dealers write for discounts to

A. L. WILKINSON

811 Dime Bank Bldg.

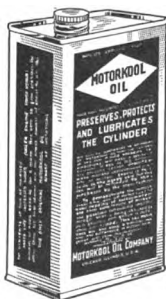
Detroit, Mich.

We Recommend— "MOTORKOOL" OIL

The only Upper Cylinder Lubricant and Motor Laxative

Seals the Pistons—causes complete combustion—prevents carbon crystallizing and results in a smoother, cooler running motor.

LESS FRICTION—MORE POWER



Satisfaction Guaranteed

For motor cars, trucks, tractors or any type of internal-combustion engine, using gasoline or distillate.

RETAILS

In Quart cans.....\$ 2.50
1 Gallon 9.00
5 Gallons 40.00

Special casks.

Write for trade prices and selling proposition.

MOTORKOOL OIL COMPANY

28 E. Jackson Blvd.
Chicago, Ill.

It's A KRAEUTER—

the Plier
that grips
like a
vise.



"VICTOR"

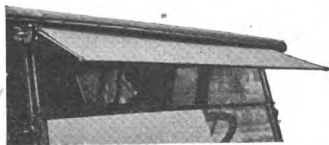
One of a complete line of the finest gripping and side-cutting pliers made.

Catalog on request.

KRAEUTER & CO., Inc.

NEWARK, N. J.

Makers of Kraeuter Tools and High Grade Drop Forgings



As It Appears When in Use

JOBBERs and DEALERs write for prices and discounts to the trade.

The Roberts Mfg. Co., New Haven, Conn.

Jaknife WINDSHIELD VISOR

The New Jaknife Windshield Visor

Made in sizes to fit any car.

Folds out of sight when not in use.

Adjustable to any angle.

Bronze arms and brackets black enameled or nickel plated.

All metal Curtain Roller.

Best quality black top material used—underside finished in green.



As It Appears When Not in Use

Please mention The Automobile Trade Directory

TUBES, Inner (Continued)

- M S—See Middle States Rubber Co.
 McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.
 McGraw Tire & Rubber Co., Euclid Bldg., Cleveland, O.
 McLean Tire & Rubber Co., East Liverpool, O. "Champion."
 Majestic Tire & Rubber Co., Cruse & Daly Sts., Indianapolis, Ind.
 Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 965.)
 Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa. (See page 1005.)
 Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "American," "United," "Ohio."
 Marathon Tire & Rubber Co., Cuyahoga Falls, O.
 March—See Mallickson & Co.
 Marion Tire & Rubber Co., George & Grand Sts., Marion O.
 Martin, Jas., 130-34 W. 52nd St., New York, N. Y. (Dealer.) (See page 637.)
 Mason Tire & Rubber Co., 302 Lake St., Kent, O.
 Mercer Rubber Co., Hamilton Square, N. J.
 Meyer Rubber Co., Columbiana, O.
 Michelin Tire Co., Milltown, N. J.
 Mid-Continental Tire Mfg. Co., Wichita, Kans. "Midco."
 Midco—See Mid-Continental Tire Mfg. Co.
 Midco—See Zenith Tire & Rubber Co.
 Middle States Rubber Co., Painesville, O. "M. S."
 Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.
 Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "Eternal," "Rainbow."
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Mississippi Valley Rubber Co., Iowa City, Ia.
 Mohawk Rubber Co., E. Market St., Akron, O.
 Monarch—See Perfection Tube Co.
 Montford Rubber Co., 354 Main St., Buffalo, N. Y. "Red Racer."
 Mooney—See Keystone Rubber Mfg. Co.
 Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
 Naco—See National Motor Accessories Corp.
 Nassau—See Thermold Rubber Co.
 National Rubber Products Corp., Tenth St. & Columbia Ave., Philadelphia, Pa.
 National Tire Co., Broad St. Bank Bldg., Trenton, N. J.
 National Tire & Rubber Co., East Palestine, O. "Capitol," "Highway," "Olympian," "Roamer," "Record."
 Nebraska Tire & Rubber Co., 3167-77 Spaulding St., Omaha, Neb. "Cornhusker."
 Neverout—See Rose Mfg. Co.
 New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Car-spring," "Anchor."
 No Ceem Rubber Corp., 105 Harrison Ave., Harrison, N. J.
 Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.
 O'Claire—See Chicago Rubber Clothing Co.
 Ohio—See Mansfield Tire & Rubber Co.
 Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. (Distributors.) (See page 961.)
 Oldfield Tire Co., Akron, O.
 Olympian—See National Tire & Rubber Co.
 Overland Tire & Rubber Co., 30th & Taylor Sts., Omaha, Neb.
 Palmer Tire & Rubber Co., St. Joseph, Mich.
 Para-Bell—See Columbia Tire & Rubber Co.
 Paramold—See Pharis Tire & Rubber Co.
 Peerless Puncture-Proof Tube Co., 3030 McGee Traffic Way, Kansas City, Mo.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Perfection Tire & Rubber Co., Fort Madison, Iowa.
 Perfection Tube Co., Painesville, O. "Monarch."
 Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 595.)
 Pharis Tire & Rubber Co., Newark, O. "Paramold." (See page 961.)
 Plexus Tire & Rubber Co., Tacony, Pa. "Tuf."
 Portage Rubber Co., Barberton, O.
 Portage Tire & Rubber Co., Akron, O.
 Powertown Tire Corp., 955 Main St., Buffalo, N. Y.
 Prudential Tire & Rubber Co., 8 S. Dearborn St., Chicago, Ill.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Quality Tire & Rubber Co., 24th & Walton Sts., Anderson, Ind. "Long-Wear."
 Racine Auto Tire Co., 1215 State St., Racine, Wis. "Horseshoe."
 Rainbow—See Midland Tire & Rubber Co.
 Racine Rubber Co., Asylum Ave., Racine, Wis.
 Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.
 Record—See National Tire & Rubber Co.
 Red Devil—See London Rubber Co.
 Red Racer—See Montford Rubber Co.
 Reliance Tire & Rubber Corp., Manchester Ave., Keyport, N. J.
 Republic Rubber Co., Albert St., Youngstown, Ohio.
 Reserve—See Western Reserve Tire Corp.
 Rhinos—See Cupples Co.
 Roamer—See National Tire & Rubber Co.
 Rose Mfg. Co., Philadelphia, Pa. "Never-out." (See page 563.)
 Rotary Tire & Rubber Co., Zanesville, O.
 Rubber Co. of America, Hartford Bldg., Chicago, Ill. (Sole Distributors for Wilson Tire & Rubber Co., Springfield, Ill.)
 Rubber Products Co., Barberton, O. "Stronghold."
 Rubber Products Corp., Shelton, Conn. "Black Stripe."
 S. H. Rubber Mfg. Co., 1776 Broadway, New York, N. Y. "Winner."
 Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.
 Savage—See Spreckels-Savage Tire Co.
 Schavolt Rubber Co., Lee St., Stamford, Conn.
 Sealrite—See Victory Rubber Mfg. Co.
 Security Tire & Rubber Co., Wellington, O.
 Semco—See Semple Rubber Co.
 Semple Rubber Co., 112 Murray St., Trenton, N. J. "Semco."
 Sequayale—See Great Republic Tire & Rubber Mfg. Co.
 Service Rubber Co., 2615 Walnut St., Kansas City, Mo.
 Shaw Tire Co., Old South Bldg., Boston, Mass. "Auto-Seal."
 Sherman-Stievsen Tire & Rubber Co., Elks Bldg., Scottsdale, Pa.
 Sioux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sioux City, Ia.
 Sound—See Western Rubber Co.

Everything is listed under the NOUN or principal word

TRAILERS

For Passenger Cars
and Trucks

TWO WHEEL—SEMI-TRAILERS

FOUR WHEEL—PIPE AND POLE

800 to 16000 POUNDS CAPACITIES

C. J. P. LUCAS, Buenos Aires, South American Representative

BODIES

FOR ALL MAKES OF TRUCKS
BUILT TO YOUR ORDERS

THE HESSE MFG. CO.

Leavenworth, Kansas

Anchor

Demountable Tops

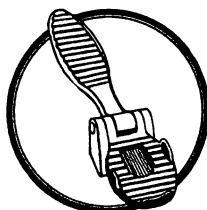
For Buick, Overland, Reo, Dodge,
Essex, Maxwell, Willys Knight,
Chevrolet, Ford Cars.

Also An Attractive Line of Limou-
sine, Landulet and Taxicab Bodies.

*Photographs and Complete
Literature Upon Request.*

THE ANCHOR TOP & BODY CO.
2000 South Street
CINCINNATI - - - OHIO

DE LUXE LINES ARE SUPERIOR



They Are Auto Necessities— Not Accessories

DeLuxe Sun and Rain Shields—all metal or glass, as desired. They beautify the car as well as giving driving comfort and safety. They are substantially built. They will not rattle. They are made for all cars—open or closed.

DeLuxe Rear Sight Mirrors are made of heavy plate—adjustable fittings—moisture proof backing—they will not blister.

DeLuxe Foot Throttles are of polished aluminum. They are adjustable to any position. They maintain a steady pressure on the gas accelerator. They cut down gas bills. A wonderful comfort on long drives. Dealers—Handling the DeLuxe Lines is profitable business. Your customers will demand Sun and Rain Shields. Write us for prices.

The DeLuxe Auto Manufacturing Co.
735 West Washington St. Los Angeles, Cal.
Beedee Distributing Service
613 West Pico St. Los Angeles, Cal.

HOODS, FENDERS, TANKS

FOR

TRACTORS, TRUCKS AND AUTOMOBILES

ALSO

Sheet Metal Stampings. ☐ Brass, Bronze and Aluminum Castings. ☐ Gasoline and Kerosene Fire Pots, Torches and Braziers. ☐ Oil Burning Machines for Compressed Air for Preheating, Tempering, Etc.

CLAYTON & LAMBERT MFG. CO.

10567 Knodell Avenue, Near Detroit Terminal Railway

DETROIT, MICH. U.S.A.

Please mention The Automobile Trade Directory

TUBES, Inner (Continued)

South Bend—See International India Rubber Corp.
 Southern Tire & Rubber Co., 150 Nassau St., New York, N. Y.
 Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."
 Sprague Tire & Rubber Co., 18th & Ozard Sts., Omaha, Neb.
 Spreckels-Savage Tire Co., Main & Sicard Sts., San Diego, Cal. "Savage."
 Stalwart—See Ashland Tire & Rubber Co.
 Standard Four Tire Co., Keokuk, Ia.
 Standard Tire Co., Willoughby, O.
 Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."
 Stanwood—See Hardman Rubber Corp.
 Star Rubber Co., 1073 Crozier St., Akron, O.
 Sterling Tire Corp., Rutherford, N. J.
 Stronghold—See Rubber Products Co.
 Sturdy Tire & Rubber Co., 17-35 Perrine Ave., Trenton, N. J.
 Sturges Tire & Rubber Co., Oakland, Cal. "V. K."
 Surety Tire & Rubber Co., St. Louis, Mo. "Axiom." (See page 965.)
 Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
 Thermoid Rubber Co., Trenton, N. J. "De Luxe," "Nassau." (See page 551.)
 Tireometer—See Currie Bros. Co.
 Tolliver Tube & Tire Co., 3100 Downing St., Denver, Colo.
 Traveler Tire & Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Philadelphia, Pa.
 Trent Rubber Co., 105-11 Enterprise St., Trenton, N. J. "Truco."
 Triumph Tire & Rubber Co., Manley, Mount & Nelson Sts., Long Island City, N. Y. (Dealers.) (See page 901.)
 Tru-matic Tire & Tube Co., 207 W. 76th St., New York, N. Y.
 Truco—See Trent Rubber Co.
 Tuf—See Plexus Tire & Rubber Co.
 Tuff-E-Nuff—See Converse Rubber Shoe Co.
 Tulsa—See U. S. Compression Inner Tube Co.
 Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."
 Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Last-Wel."
 Tyer Rubber Co., Andover, Mass. "Tyrian."
 Tyrian—See Tyer Rubber Co.
 U. S. Compression Inner Tube Co., Tulsa, Okla. "Tulsa."
 United—See Mansfield Tire & Rubber Co.
 United States Leatheroid & Rubber Co., Lowell St., Reading, Mass. "Handy."
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Universal Rubber Products Co., Zellenople, Pa. V. K.—See Sturges Tire & Rubber Co.
 Vadacol—See Dry Climate Tire Mfg. Co.
 Veghte, Harry V., 799 Seventh Ave., New York, N. Y. "Beat." (See page 641.)
 Velvet—See Lee Tire & Rubber Co.
 Victor Rubber Co., Springfield, O. (See page 957.)
 Victory Rubber Mfg. Co., 259 Peachtree St., Atlanta, Ga. "Sealtite."
 Victory Tire & Rubber Co., Asbury Park, N. J.
 Viking—See Voorhees Rubber Mfg. Co.
 Vitallo—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Viking," "Ideal."

Vulcan Rubber Co., Erie, Pa.
 Vulco—See Gates Rubber Co.
 Vulcaweld Rubber Co., Pottstown, Pa.
 Vulpa—See Spencer Co.
 Wayne—See Fort Wayne Tire & Rubber Mfg. Co.
 Western Reserve Tire Corp., Cleveland, O. "Reserve."
 Western Rubber Co., 6200 S. Union Ave., Tacoma, Wash. "Sound."
 Wilson Tire & Rubber Co.—See Rubber Co. of America.
 Winner—See S. H. Rubber Mfg. Co.
 Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa.
 X-L—See Excel Rubber Co.
 Yale Tire & Rubber Co., 1002 Dixwell Ave., New Haven, Conn.
 Zee-Zee Rubber Co., Yardville, N. J. "Haywood," "Climax."
 Zenith Tire & Rubber Co., Leader-News Bldg., Cleveland, O. "Midco."

TUBES, MICA—See Mica**TUBES, Non-Explosive Tank Filling**

Kessler—See Non-Explosive Can & Tube Co.
 Non-Explosive Can & Tube Co., 127-29 S. Green St., Chicago, Ill. "Kessler."

TUBES, PORCELAIN—See Porcelain**TUBES, Speaking**

(For *Automatic Telephones*—See *Telephones, Automatic*; for *Annunciators*—See *Annunciators*)

Bridgeport Coach Lace Co., 818 Wood Ave., Bridgeport, Conn. (See page 165.)
 Cowles & Co., C., New Haven, Conn.
 English & Mercick Co., New Haven, Conn. (See page 571.)
 Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.
 Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

TUBING, Aluminum

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Ivins Tube Works, Millwood, Oak Lane Station, Philadelphia, Pa.

TUBING, Brass and Copper

American Brass Co. (Kenosha Branch), Kenosha, Wis.
 American Brass Co., Waterbury, Conn. (See page 165.)
 Baltimore Tube Co., Ostend & Wilcomico Sts., Baltimore, Md.
 Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)
 Chase Rolling Mill Co., Grand St., Waterbury, Conn.
 Claussen Tube Works, J. H., 25 Day St., Brooklyn, N. Y.
 Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.
 Cornells & Gridley, Wolcott St., Waterbury, Conn.
 Dallas Brass & Copper Co., 225 N. Jefferson St., Chicago, Ill.

Everything is listed under the NOUN or principal word

MALCO TIRES AND TUBES

**A Quality Line with Unusual
Profits**

Importers find "Malco" tires an ideal proposition. Quick sales, satisfied customers and an exceedingly liberal margin of profit.

Unique construction—ribbed and non-skid tread types. Materials and workmanship perfect throughout. A truly high-grade standard full weight tire, with a low list price and large discounts that particularly appeal to overseas buyers.

Responsible dealers and agents are urged to send at once for territory rights. Discounts and terms will be forwarded to you. Please state your yearly capacity.

Branches in Leading Cities of the United States

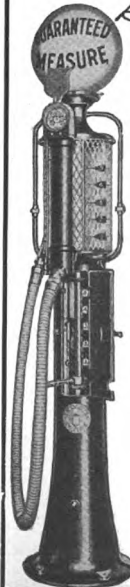
MALCO TIRE and RUBBER CO.
30th & Chestnut Sts., Philadelphia, Pa.
U. S. A.

Export Dept., 11 Broadway, New York, U.S.A.

**The Most Remarkable
Automobile Top Material
Yet Produced**



L. J. Muttý Co.
Boston, Mass., U. S. A.



Guarantee
VISIBLE PUMPS

Make More Money

The surest way to get the greatest gallonage out of your location, and to make real money selling gasoline and oils is the wide-awake, up-to-date, sure-measure Guarantee Visible way.

Address T. D. Dept.
for information.

Guarantee Liquid Measure Company
Rochester - - Penna.

POLACK TRUCK TYRES

Increased production of Polack Solid Tyres enables us to offer additional dealer franchises and undertake truck manufacturers' equipment contracts.

Polack Tyres are guaranteed 12,000 miles and a record of 22 years shows they do deliver mileage.

The Buckeye Rubber Products Company

**Polack Solid Tyre Division
WILLOUGHBY, OHIO**

"Since 1899 - World's Standard"

Please mention The Automobile Trade Directory

TUBING, Brass and Copper (Cont'd)

Detroit Copper & Brass Rolling Mills, Clark Ave. below Wabash R. R., Detroit, Mich.
 Erie-Buffalo Tube Co., 18th & Cranberry Sts., Erie, Pa.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 French Mfg. Co., 142 Robbins St., Waterbury, Conn.
 Mackenzie-Walton Co., Pawtucket, R. I.
 Michigan Copper & Brass Co., 5851 W. Jefferson Ave., Detroit, Mich. "Wolverine."
 Michigan Tube Co., 676 W. Grand Blvd., Detroit, Mich.
 Mohican Brass & Copper Works, 107 Liberty St., New York, N. Y.
 National Brass & Copper Tube Co., 41 Park Row, New York, N. Y.
 National Co., 57 N. Main St., Waterbury, Conn.
 National Copper Smelting Co., 1839 Colman Rd., Cleveland, O.
 New Jersey Tube Co., Kingsland Ave., Harrison, N. J.
 Randolph-Clowes Co., 384 Bank St., Waterbury, Conn.
 Roberts Tube Works, 2500 Military Ave., Detroit, Mich.
 Rome Brass & Copper Co., E.-Dominick St., Rome, N. Y.
 Rome Hollow Wire & Tube Co., Railroad St., Rome, N. Y.
 Standard Brass & Copper Tube Co., Woodbridge & Division Sts., New London, Conn.
 Standard Metalwork Co., Thompsonville, Conn.
 Uniform Seamless Wire Co., 71 Peck St., Providence, R. I.
 United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Wells & Co., A. H., 561 Watertown Ave., Waterbury, Conn.
 Wolverine—See Michigan Copper & Brass Co.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 671.)

TUBING, BRASS IRON-LINED—See Tubing, Iron-Lined**TUBING CONNECTIONS—See Unions, Tubing****TUBING, COPPER—See Tubing, Brass and Copper****TUBING, FIBRE—See Fibre, Hard****TUBING, FLEXIBLE CONTROL—See Cable, Flexible Control****TUBING, Flexible Metallic**

(For oil or gasoline piping, speedometer shaft covering, wire covering, exhaust piping, carburetor hot air pipes, etc.)

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
 American Metal Hose Co., Waterbury, Conn. (See page 291.)
 American Metal Moulding Co., 141 N. J. Railroad Ave., Newark, N. J.
 Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.
 Auto-Steelflex—See National Metal Molding Co.

Breeze Mfg. Co., 255 South St., Newark, N. J. "Fle-X-met."
 Chicago Tubing & Braiding Co., 214-24 N. Clinton St., Chicago, Ill. "Rex."
 Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.
 Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.
 Dewes Co., A., 199 Lafayette St., New York, N. Y. (See page 531.)
 Duoflex—See Fischer Spring Co.
 Fischer Spring Co., Chas., 33-90 Walker St., New York, N. Y. "Duoflex."
 Fle-X-met—See Breeze Mfg. Co.
 Flexible Armored Hose Co., 753 Main St., Buffalo, N. Y.
 International Metal Hose Co., Harvard & E. 103rd St., Cleveland, O.
 Kilck Tubing & Braiding Co., 328-32 N. Randolph St., Philadelphia, Pa.
 Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
 Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 531.)
 Mulconroy Co., 54th & Jefferson Sts., Philadelphia, Pa.
 National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex." (See page 295.)
 Pennflex—See Pennsylvania Flexible Metallic Tubing Co.
 Pennsylvania Flexible Metallic Tubing Co., Broad & Race Sts., Philadelphia, Pa. "Pennflex."
 Pipe & Tube Bending Corp. of America, Newark, N. J.
 Rex—See Chicago Tubing & Braiding Co.
 Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Steelflex—See National Metal Molding Co.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 289.)
 Triplexd—See Metal Hose & Tubing Co.
 United Metal Hose Co., 532 W. 23d St., New York, N. Y.
 U. S. Flexible Metallic Tubing Co., Boyd & Omar Sts., Los Angeles, Cal.
 Whalen Co., John, 55 Purchase St., Boston, Mass.

TUBING, HARD RUBBER—See Rubber, Hard**TUBING, Iron-Lined Brass**

American Brass Co., Waterbury, Conn. (See page 165.)
 Phenix Tube Co., Warren, O.
 Rome Mfg. Co., Railroad St., Rome, N. Y.

TUBING, RUBBER—See Tubing, Soft Rubber; also Rubber, Hard**TUBING, Soft Rubber**

Acme Rubber Mfg. Co., Trenton, N. J.
 Alpha—See Parker, Stearns & Co.
 Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.
 Boston Belting Co., 84 Linden Park St., Boston, Mass.
 Boston Woven Hose & Rubber Co., Cambridge, Mass. "Bull Dog."

Everything is listed under the NOUN or principal word



**FLEXIBLE
LAM-
INATED
STEEL ARCH
SPRING**

SATISFACTION OR MONEY REFUNDED

**FITS MOST CARS
NO FRICTIONAL
WEARING PARTS**



DEALERS WANTED

ALSPRING
SHOCK ABSORBER MFG. CO.
MINNEAPOLIS, MINN. U. S. A.

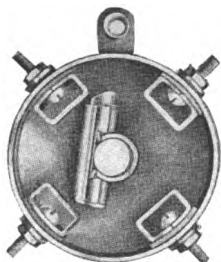
The Most Practical SHOCK ABSORBER Ever Devised

PRACTICAL in every detail of construction and built upon the soundest principle possible, Alspring Shock Absorbers are the best insurance against deterioration of expensive automobiles.

Alsprings consist of coil springs mounted within a curved, flexible, laminated steel spring of great strength. Thus the road shocks are absorbed by both features, yet neither one must bear the entire burden. Doubly effective and virtually indestructible are these Alspring Shock Absorbers.

Mileage SERVICE Guaranteed

**RIMCO
WIPE TIMER**



**Manufactured entirely under one roof
Guaranteed for 10,000 Miles**

It starts easy. Ends timing trouble. Begins a new era of Pep, Power and Performance in your Ford motor. All wearing parts made of specially treated steel and replaceable. No necessity to buy a new timer because one part wears out. Remember this for economy. Runs in grease. No daily oiling.

Dealers! Better Investigate this Snapliest Seller of All. Write for Special Introductory Offer. We recommend Rimco Timer Grease for best results.

RIBLET MANUFACTURING CO.
502 Markwell Bldg. Long Beach, Calif.

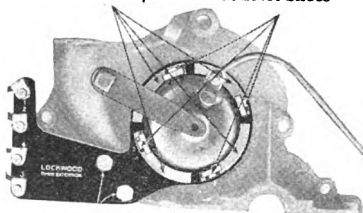
**LOCKWOOD
Timer Extension**

FOR

Ford Cars and Trucks

Contact Plates

Contact Shoes



Bolts Holding Extension

List Price \$350 in U. S. A.

Eliminates the loose wires running under oil filling cup and attaching to timer, avoiding any chance for wires becoming oil-soaked or insulation to become worn off. Write for descriptive literature.

Dealers: If your jobber cannot supply you, order direct

LOCKWOOD PRODUCTS CO.
Metropolitan Bank Building MINNEAPOLIS, MINN.

Does The Work of Ten Tools



This device will outlast any valve seat facer on the market, is instantly adjustable to any size valve, and will save you about 66% on the cost of the tools required at present to accomplish the same work. It is the only adjustable and interchangeable valve seat facer manufactured. The jaws are made of Tool Steel, properly hardened, and are as strong and accurate as a solid facer. This tool takes the place of TEN separate facing tools now necessary. The pilot stems are interchangeable and will fit any size valve stem accurately.

The ten separate tools will cost you \$36.00. The price of our Facer is \$12.00, and it will do more and better work than the expensive set, and besides is adjustable to all "off" sizes.

Patented August 10, 1920

All infringements on this patent will be prosecuted

Jobbers and Dealers Please Write

HOERNER MFG. CO.

3929 MONETA AVE.

LOS ANGELES, CALIF.

Please mention The Automobile Trade Directory

TUBING, Soft Rubber (Continued)

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
 Bull Dog—See Boston Woven Hose & Rubber Co.
 Canfield Rubber Co., Bridgeport, Conn.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal." (See page 531.)
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."
 Dural Rubber Corp., Maple Ave., Flemington, N. J.
 Empire Rubber & Tire Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Everware Rubber Co., 341 Oregon St., Milwaukee, Wis.
 Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Goodrich Co., E. F., S. Main St., Akron, O.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 471.)
 Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.
 Mechanical Rubber Co., 807 W. Randolph St., Chicago, Ill. "Usco."
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Milford Rubber Works, Milford, Ill.
 Miller Rubber Co., Akron, O.
 National India Rubber Co., Bristol, R. I.
 New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J.
 New York Belting & Packing Co., 91 Chambers St., New York, N. Y.
 Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.
 Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Plexus Tire & Rubber Co., Tacony, Pa.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Royal—See Cincinnati Rubber Mfg. Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 551.)
 United States Tire Co., 1790 Broadway, New York, N. Y.
 Usco—See Mechanical Rubber Co.
 Vitalic—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

TUBING, Steel

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 605.)
 American Steel Tube Co., Buckeye St., Terminal R. R., Toledo, O.
 American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
 American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Bordentown Steel & Tube Corp., Bordentown, N. J.
 Connecticut Tubing Co., 556 Capitol Ave., Hartford, Conn.
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 Delaware Seamless Tube Co., Auburn, Pa.

Detroit Seamless Steel Tubes Co., W. Warren Ave. & Wyoming St., Detroit, Mich.
 Elisaco—See Elyria Iron & Steel Co.
 Elyria Iron & Steel Co., Cleveland, O. "Elisaco." (See page 1011.)
 Emco—See Excello Mfg. Co.
 Empire Tube & Steel Corp., Second Ave. & 11th St., College Point, N. Y.
 Empire Tube & Steel Corp., College Point, N. Y.
 Excello Mfg. Co., 923 Westminster St., Providence, R. I. "Emco."
 Fiat Metal Mfg. Co., 217-23 W. Huron St., Chicago, Ill.
 Frasse & Co., Peter A., New York, N. Y. (Eastern Distributors for "Shelby Tubing.") (See page 909.)
 Globe Seamless Steel Tubes Co., Peoples Gas Bldg., Chicago, Ill.
 Ivins Tube Works, Ellwood, Oak Lane Station, Philadelphia, Pa.
 Kawneer Mfg. Co., 931 Front St., Niles, Mich.
 Michigan Steel Tube Products Co., Elm-tree Blvd., nr. Holbrook & Conant Sts., Detroit, Mich. (See page 1027.)
 Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y. (See page 1027.)
 Morris & Co., E. K., 811-17 W. Second St., Cincinnati, O. (Dealers.) (See page 1029.)
 National Tube Co., Frick Bldg., Pittsburgh, Pa. "Shelby."
 Newark Tube & Metal Works, 560 Ferry St., Newark, N. J.
 Ohio Seamless Tube Co., Shelby, O. (See page 1009.)
 Ohio Steel Products Co., Mineral Ridge, O.
 Perfection Metal Products Co., College Point, N. Y.
 Pittsburgh Shafting Co. of Detroit, 1300 W. Fort St., Detroit, Mich.
 Pittsburgh Steel Products Co., Union Arcade, Pittsburgh, Pa.
 Shelby—See National Tube Co.
 Standard Metalwork Co., Thompsonville, Conn.
 Standard Steel Tube Co., Toledo, O. (See Inside Front Cover.)
 Standard Welding Co., Cleveland, O. "Stan-weld."
 Stanweld—See Standard Welding Co.
 Titan—See Empire Art Metal Co.
 Toledo Steel Tube Co., 2115 Smead Ave., Toledo, O.
 Tube Products Co., 2699 Guolin St., Detroit, Mich.
 Ward's Sons Co., Edgar T., 44 Farnsworth St., Boston, Mass. (Eastern Distributors for Pittsburgh Tubing.) (See page 1033.)

TUBING UNIONS—See Unions, Tubing

TUBULAR BOILERS—See Boilers, Steam

TUBULAR RIVETS—See Rivets, Tubular and Clinch

TUFTING BUTTONS—See Buttons, Upholstery

TUFTING MACHINES—See Machines, Upholstery

TUFTING TWINE—See Twine, Tufting

TUFTING WASHERS—See Washers, Tufting

Everything is listed under the NOUN or principal word



"OHIO SPECIAL"



THE MECHANICAL SEAMLESS

STEEL TUBE OF QUALITY



THE OHIO SEAMLESS TUBE COMPANY.

CARBON STEELS

ALLOY STEELS

ELECTRIC WELDERS-ARC-SPOT-BUTT

ELECTRIC RIVETERS

SPECIAL MACHINES DESIGNED

THE WINFIELD ELECTRIC WELDING MACHINE CO.

THE TAYLOR WELDER CO.

SPECIAL DROP, HAMMERED AND MACHINE

FORGINGS

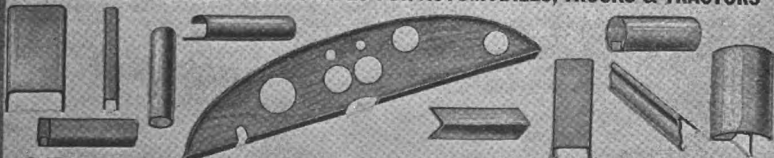
Heat Treating and Annealing

Send us prints for estimates

THE OHIO FORGE CO.

MORTON MFG. CO.

MOULDING & PRESSED STEEL SHAPES FOR AUTOMOBILES, TRUCKS & TRACTORS



SPECIAL SHAPES TO YOUR DESIGN

DENTON & ANDERSON

CHICAGO

PEOPLES GAS BLDG.

CLEVELAND

ENGINEERS BLDG.

DETROIT

DIME BANK BLDG.

DIRECT REPRESENTATIVES



Please mention The Automobile Trade Directory

TURN-BUCKLES, Airplane

Aero Mfg. & Accessories Co., 18-20 Dunham Pl., Brooklyn, N. Y.
 Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
 D. W. F. Engineering Co., 69 Sprague St., Providence, R. I. "Liberty."
 Dayton Metal Products Co., 330-36 N. Taylor St., Dayton, O.
 Erie Specialty Co., Erie, Pa.
 Liberty—See D. W. Engineering Co.
 National Aeroplans Co., 549 W. Washington St., Chicago, Ill.
 National Lock Washer Co., 40 Hermon St., Newark, N. J.
 Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
 Standard Screw Co. of Penna., Corry, Pa.
 Standard Turnbuckle Co., Corry, Pa.
 Steel Products Co., Cleveland, O.
 (See page 145.)

TURN-BUCKLES, Wrought

American Forging Co., 2700-98 N. 24th St., Birmingham, Ala.
 Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.
 Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
 Columbus Bolt Works Co., Columbus, O.
 (See page 147.)
 Eberhard Mfg. Co., 1734 Tennyson Rd., Cleveland, O.
 Haskell Mfg. Co., Wm. H., 34 Commerce St., Pawtucket, R. I.
 Merrill Bros., 3 Arnold St., Maspeth, N. Y.
 Michigan Bolt & Nut Co., ft. Meldrum Ave., Detroit, Mich.
 New England Bolt & Steel Co., Bowdoin St. (Everett), Boston, Mass.
 Peninsular Milled Screw Co., 6910 E. Lafayette St., Detroit, Mich.
 Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
 Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

TURNING ATTACHMENTS—See Attachments, Lathe Cranksaft Turning

TURNTABLES, Automobile

(See also Casters and Wheel Trucks)

Bicycle Step Ladder Co., 6 W. Randolph St., Chicago, Ill. "Murray".
 Canton Foundry & Machine Co., Third St. & Savannah Ave., S. E., Canton, O.
 Ernst's Sons, C. F., 75 Lathrop St., Buffalo, N. Y.
 Garage Engineering & Equipment Co., National Transit Bldg., Oil City, Pa.
 Lansing Co., Lansing, Mich.
 Link-Belt Co., Indianapolis, Ind.
 (See page 237.)
 Murray—See Bicycle Step Ladder Co.
 Nicols & Bro., George F., Old Colony Bldg., Chicago, Ill.
 Perfection—See Zering Mfg. Co.
 Pitless Auto Turntable Co., Traders Bldg., Kansas City, Mo.
 Portland Garage Co., 49-51 Cross St., Portland, Me.
 Richards-Wilcox Mfg. Co., Third St. & C., B. & Q. R. R. Tracks, Aurora, Ill.
 Rochester Iron Works, Powers Bldg., Rochester, N. Y.

Smith Iron Co., G. W. & F., Gerard St., Boston, Mass.
 Turner Machine Co., 28 Maple Ave., Danbury, Conn.
 United Casting Co., Wilson & Violet Sts., Los Angeles, Cal.
 Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O. "Perfection."

TURNTABLES, Storage Battery

(To eliminate the lifting of heavy batteries when reporing or overhauling them)

Ambu—See American Bureau of Engineering.
 American Bureau of Engineering, Michigan Ave. & 16th St., Chicago, Ill. "Ambu." (See page 659.)
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, Ind. (See page 79.)
 Cowie Electric Co., E. S., 1818 McGee St., Kansas City, Mo.

TURRET LATHES—See Lathe, Turret

TWINE, Tufting

Travers Twine & Cordage Co., 31 Warren St., New York, N. Y.

TWIST DRILLS—See Drills, Twist

TWISTERS, RADIATOR FIN FOR FORDS
 —See Tools, Radiators Fin Straightening

TWO WAY COCKS—See Valves, Two Way Tank

TWO WAY VALVES—See Valves, Two Way Tank

UNDER BONNETS—See Fans, Dust

UNDERSLUNG FITTINGS FOR FORDS—
 —See Fittings, Car Lowering

UNDERWATER EXHAUST BOXES, MOTOR BOAT—See Boxes, Motor Boat Underwater Exhaust

UNIONS, PIPE—See Fittings, Pipe

UNIONS, Tubing

(Compression or solderless and soldering fittings, including unions, tees, etc., for connecting small size brass and copper tubing for oil and gasoline lines, etc.)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
 American Brass Products Co., Pottstown, Pa.
 Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
 Detroit Brass Works, 99 Hobart St., Detroit, Mich.
 Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.
 Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
 Dohner—See Ohio Metal Products Co.
 Edelmann & Co., E., 2633 N. Crawford Ave., Chicago, Ill.
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 McRae & Roberts Co., 100-116 S. Campbell Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word

ELISCO STEEL TUBING

Made under an exclusive process, by automatic machines. Extra strong in the weld, permits bending and forming operations hitherto possible only with seamless drawn tubing.

Has no superior for mechanical accuracy and finish. Made in light gauges, cold drawn or hot rolled.

Hot and Cold Rolled Strip Steel for Stamping and Deep Drawing Purposes

Send us your inquiries

THE ELYRIA IRON & STEEL CO.

Cleveland

Chicago

Atlanta

MOUND TOOLS

For The Automobile

STANDARD FOR 30 YEARS



**Bearing Scrapers Pry Bars
Carbon Scrapers Cotter Pin Extractors
Chisel Sets Mound Tool Rolls
Offset Screw Drivers**

Send for Catalog

THE MOUND TOOL CO., Dept. D, 7th and Hickory Sts., St. Louis, Mo., U. S. A.

CONTRACT WORK

We are thoroughly equipped to handle your surplus manufacturing of Dies, Tool, Jigs, Gauges, Fixtures and Special Machinery or Machine Parts.

We are experts in our line. Kindly let us handle your next job or send blue prints.

JOHNSON TOOL CO., INC.

197-199 Eddy Street

Providence, R. I.

Please mention The Automobile Trade Directory

UNIONS, Tubing (Continued)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 Newton Mfg. Co., Church St., Plainville, Conn.
 Ohio Metal Products Co., Dayton, O. "Dohner."
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis. "Union Cinch."
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Union Cinch—See Richardson-Phenix Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 Williams Valve Co., D T., Spring Grove Ave. & Township St., Cincinnati, O.

UNITS, TRACTOR — See Converters, Chassis

UNITS, TRUCK—See Converters, Chassis

UNIVERSAL GRINDERS—See Grinders, Universal

UNIVERSAL JOINT COVERS—See Boots, Steering Knuckle

UNIVERSAL JOINT DISCS—See Discs, Universal Joint

UNIVERSAL JOINTS — See Joints, Universal

UPHOLSTERY BINDINGS—See Bindings, Upholstery

UPHOLSTERY BROADCLOTH — See Broadcloth

UPHOLSTERY BUTTON MACHINES—See Machines, Upholstery Button

UPHOLSTERY BUTTONS—See Buttons, Upholstery

UPHOLSTERY CARPET—See Carpet

UPHOLSTERY CLEANERS—See Cleaners, Upholstery

UPHOLSTERY CLOTH—See Cloth; also Broadcloth; also Silk; also Whipcord

UPHOLSTERY DRESSING—See Dressing, Leather

UPHOLSTERY FABRICS—See Cloth; also Broadcloth; also Silk; also Whipcord

UPHOLSTERY FELT—See Felt, Upholstery

UPHOLSTERY HAIR—See Hair, Upholstery

UPHOLSTERY LACE—See Lace, Coach

UPHOLSTERY LEATHER—See Leather, Artificial; also Leather, Natural

UPHOLSTERY MACHINES—See Machines, Upholstery

UPHOLSTERY MOSS—See Moss, Upholstery

UPHOLSTERY NAILS—See Tacks, Upholstery

UPHOLSTERY SILK—See Silk, Upholstery

UPHOLSTERY SPRINGS — See Springs, Seat

UPHOLSTERY TACKS—See Tacks, Upholstery

UPHOLSTERY THREAD—See Thread, Upholstery

UPHOLSTERY TUFTING MACHINES—See Machines, Upholstery Tufting

UPHOLSTERY TUFTING WASHERS—See Washers, Tufting

UPHOLSTERY VELVETS—See Velvets, Upholstery

UPHOLSTERY WHIPCORD—See Whipcord

UPRIGHT DRILLS—See Drills, Upright

USED CAR MARKET REPORTS—See Reports, Used Car Market

VACUUM BOTTLES—See Bottles, Vacuum

V BELTS—See Belts, V

VACUUM CLEANERS—See Cleaners, Vacuum

VACUUM GASOLINE TANKS—See Tanks, Vacuum Gasoline

VACUUM TANK GAGES — See Gages, Vacuum Tank

VACUUM TANK METERS — See Gages, Vacuum Tank

VACUUM TANKS—See Tanks, Vacuum

VALVE CAGE REMOVING TOOLS—See Tools, Valve Cage Removing

VALVE CAP GASKETS — See Gaskets, Metallic

VALVE CAP GASKETS FOR FORDS—See Gaskets, Cylinder Head

VALVE DUST CAPS—See Caps, Tire Valve Dust

VALVE END SQUARING BLOCKS—See Blocks, Valve End Squaring

Everything is listed under the NOUN or principal word

Flexedge

SELF-SEATING LAMINATED VALVES

Sensible-Logical-Inevitable

A Valve-Seat Carbon Remover at Work While You Drive

FLEXEDGE VALVES Prevent Carbon Deposits

The FLEXEDGE principle is merely a slight flexation, which is so small as to measure only a tiny fraction of a thousandth of an inch, yet sufficient to gently scrape the valve seat, removing the tiny flecks of carbon, which collect after each explosion.

FLEXEDGE SELF-SEATING VALVES continuously grind themselves, always seat. They are installed just like all other valves.

FLEXEDGE DISTRIBUTORS

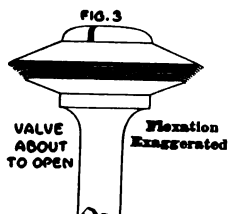
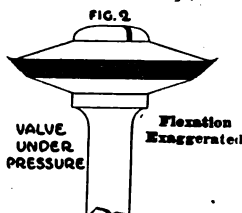
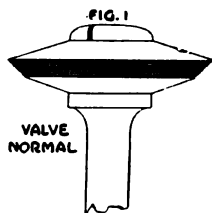
Herring Motor Company,
Des Moines, Iowa
The Gibson Company,
Indianapolis, Indiana
Motor & Machinists Supply Co.,
Kansas City, Mo.
Reinhard Brothers, Inc.,
Minneapolis, Minn.

Repass Automobile Company,
Waterloo, Iowa
Chicago Auto. Supply House,
1849-53 Michigan Ave.,
Chicago, Ill.
Motor Car Supply Co.,
1451-5 Michigan Ave.,
Chicago, Ill.
Armentrout & Sons,
Washington, D. C.

San Francisco
Seattle

Chanslor & Lyon Co.
Los Angeles
Tacoma
Spokane

San Diego
Portland



Super Power

**No Valve
Grinding**

Manufactured for all Cars by the

SELF-SEATING VALVE COMPANY
CHICAGO 706-8 Townsend Street ILLINOIS

Please mention The Automobile Trade Directory

VALVE GRINDERS—See Tools, Valve Grinding; also Machines, Valve Seating

VALVE GRINDING COMPOUNDS—See Compounds, Valve Grinding

VALVE GRINDING MACHINES—See Machines, Valve Seating

VALVE GRINDING TOOLS—See Tools, Valve Grinding

VALVE LIFT RODS—See Rods, Adjustable Valve Lift

VALVE LIFTERS—See Rods, Adjustable Valve Lift

VALVE PUSH RODS—See Rods, Adjustable Valve Lift

VALVE REMOVING TOOLS—See Tools, Valve Lifting and Spring Compressing

VALVE RESEATERS—See Tools, Valve Reseating

VALVE ROLLER PINS—See Screw Machine Products

VALVE ROLLERS—See Screw Machine Products

VALVE ROTATORS—See Rotators, Valve

VALVE SEATING MACHINES—See Machines, Valve Seating and Grinding

VALVE SILENCERS—See Silencers, Overhead Valve

VALVE SPRING LIFTING TOOLS—See Tools, Valve Spring Lifting and Compressing

VALVE SPRINGS—See Springs, Machinery

VALVE SPRINGS FOR FORDS—See Springs, Engine Valve

VALVE STEM ADJUSTERS FOR FORDS—See Adjusters, Valve Stem

VALVE STEM PINS FOR FORDS—See Pins, Valve Stem

VALVE TAPPETS—See Rods, Adjustable Valve Lift

VALVE TOOLS, TIRE—See Tools, Tire Valve Retreading

VALVE TURNING TOOLS—See Tools, Valve Seating

VALVES, AUXILIARY AIR—See Mixers, Fuel

VALVES, Ball Check

(Small ball check valves with tubing connections; see also Unions, Tubing)

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)

Lunkenheimer Co., Beekman & Tremont Sts., Cincinnati, O.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, CUT-OUT—See Valves, Muffler Cut-Out

VALVES, Engine Check

Monarch Valve Co., 113 Front St., Brooklyn, N. Y.

VALVES, Engine Poppet

(For Valves in the rough—See Forgings, Drop)

Ban-Roy & Co., 2230 S. Wood St., Chicago, Ill.

Birrell Silent Motor Co., 645 Washington Blvd., Chicago, Ill. "Flexy."

Driver-Harris Co., Harrison, N. J.

Dunham Co., Thos., Aurora, Ill.

(See page 163.)

Eastern Electric Co., Hanover, Pa. (See page 1015.)

Efemco—See Foster, Merriam & Co.

Fansteel Products Co., North Chicago, Ill. (See page 1025.)

Flexedge—See Self-Seating Valve Co.

Flexy—See Birrell Silent Motor Co.

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 809.)

Hyklas—See Parts Service Co.

Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 1015.)

National Steel Products Co., 2270 Franklin St., Detroit, Mich.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 147.)

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1170.)

Schlieder Mfg. Co., Detroit, Mich. (See page 1015.)

Self-Seating Valve Co., 706-08 Townsend St., Chicago, Ill. "Flexedge." (See page 1013.)

Steel Products Co., Cleveland, O. (See page 145.)

Super Valve Mfg. Co., 3037 N. Clark St., Chicago, Ill. (See page 1023.)

Toledo Steel Products Co., Toledo, O. (See page 1059.)

U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 605.)

Walker-Welder, 3974 14th Ave., Detroit, Mich.

Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)

VALVES, Engine Poppet, for Fords

Acme Mfg. Co., Boonton, N. J.

Canton, Co., A. S., 174 Franklin St., New York, N. Y.

Everything is listed under the NOUN or principal word

EASTERN ELECTRIC CO.

WE MANUFACTURE POPPET VALVES

EASTERN ELECTRIC COMPANY

HANOVER, PA.

MICHIGAN POPPETS

Mechanically Perfect

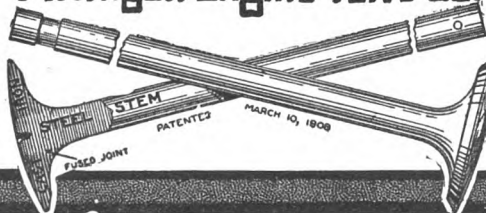
Gray Iron Heads fused the entire line of contact with the steel stems. No loose heads. No warping.

The Ideal Valve for
Automobiles Tractors Stationary Engines

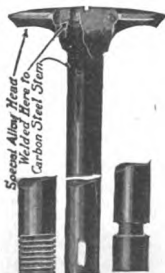
Every Valve Guaranteed. Write for Price:

Michigan Engine Valve Co.

115-117
Columbia
Street
West



Detroit
Michigan
U.S.A



SCHLIEDER VALVES

Alloy Head Oxy-Acetylene Welded to Carbon Steel Stem

DO NOT WARP

DO NOT PIT

Because of their superiority they are specified by leading engineers and designers. Unqualified approval of U. S. Government Engineers

Send your blue prints for quotations

SCHLIEDER MFG. CO.

DETROIT

Please mention The Automobile Trade Directory

VALVES, Engine Poppet, for Fords
(Continued)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. (See page 533.)
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.
 Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 1015.)
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 755.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 53.)
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O. (See page 745.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 79.)
 Wilcox Motor & Mfg. Co., Saginaw, Mich. (See page 811.)

VALVES, Gasoline Lock

(Controlling supply of gas to the carburetor; to prevent unauthorized use of car)

Davis, Waterman & Co., Elliott Square Bldg., Buffalo, N. Y.
 Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.
 Gasolock—See Headlight Support Co.
 Headlight Support Co., 722 Woodward Ave., Detroit, Mich. "Gasolock."
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 O. K. Lock Co., 264 Broadway, Buffalo, N. Y.

VALVES, GASOLINE RESERVE—See Valves, Two Way Tank**VALVES, GASOLINE RESERVE, FOR FORDS—See Cocks, Fuel Supply and Reserve****VALVES, GENERATOR—See Valves, Motor Boat Generator****VALVES, LOCK—See Valves, Gasoline Lock****VALVES, MIXING—See Valves, Motor Boat Generator****VALVES, Motor Boat Generator**

(For Carburetors—See Carburetors)

Adjusto—See Powell Co.
 Commonwealth Brass Corp., Detroit, Mich. (See page 325.)
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 James—See Generator Valve Co.
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Nonpareil."
 Monarch Valve Co., 112 Front St., Brooklyn, N. Y.
 Nonpareil—See Lunkenheimer Co.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O. "Adjusto."
 Wilkinson Co., Wm. H., Main St., West Midway, Mass.

VALVES, Motorcycle Muffler Cut-out

Oldberg Mfg. Co., Detroit, Mich. (See page 668.)

VALVES, Muffler Cut-Out

(For cut-out pedals—See Pedals, Horn and Out-out)

Au-To Compressor Co., Wilmington, O. "Oro."
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Barco Mfg. Co., 312-21 W. Illinois St., Chicago, Ill.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y. "G.P.")
 Cooper Mfg. Co.—See Fulton Co.
 Emco Mfg. Co., Binghamton, N. Y. "Taber." (See page 521.)
 Ewald—See Zinke Co.
 Fulton Co., Dept. S., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, (See page 1022.)
 G. P.—See Cassidy Co.
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See pages 172 and 173.)
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 987.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.
 Handy—See Lunkenheimer Co.
 Husk—See Western Brass Mfg. Works.
 Losee Motor Products Co., Hebron, Ill. (See page 459.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Handy."
 Oldberg Mfg. Co., Detroit, Mich. (See page 668.)
 Oro—See Au-To Compressor Co.
 Perfect—See Riverside Machine Works.
 Perfection Machine Co., Jeromeville, O.
 Petry Co., N. A., 1307 Race St., Philadelphia, Pa.
 Piel Co.—See Cassidy Co.
 Powell Muffler Co., Utica, N. Y. (See page 665.)
 Riverside Machine Works, 37 S. Jefferson St., New Castle, Pa. "Perfect."
 Romort Mfg. Co.—See Zinke Co.
 Rudie—See Western Brass Mfg. Works.
 Stanhope Forge & Machine Works, 49-51 Lansdowne St., Cambridge, Mass.
 Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.
 Taber—See Emco Mfg. Co.
 Waller Cut-out Co.—See Zinke Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Rudie," "Husk." (See page 263.)
 Zinke Co., 1322-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald," also Waller Cut-Out Co., Oelwein, Ia.) (Pages 688 and 689.)

Everything is listed under the NOUN or principal word

THE **FULTON** LINE

The Signal that WINS The Right of Way



OVER 250,000 of these melodious chime signals are now in use in all parts of the world. They WIN the right of way by their pleasing tone, a most courteous warning of the road that gives desirable distinction to any car. Easily attached to exhaust pipe. Will last a life time and give no trouble.

The **AERMORE** Exhaust Horn

Also popular for trucks and tractors. Useful in signaling from the field or while threshing, wood sawing, silo filling, to signal to the crew, etc. A size to fit any motor.

- No. 0—17-inch Aermore outfit complete with valve for cars of 40 h.p. or over...\$12.00
- No. 1—15-inch Aermore outfit complete for cars of 30 h.p..... 10.00
- No. 2—13-inch Aermore outfit complete for cars of 25 h.p..... 9.00
- No. 3—11-inch Aermore outfit complete for Fords and other light cars\$8.00

Add 50c to above prices west of Rocky Mountains.

Price of Style "G" valve when ordered separate, all sizes.....\$2.00

In ordering, give outside diameter of exhaust pipe between muffler and engine. Dealers, ask your jobber. If he cannot supply you, write direct, giving jobber's name.

MANUFACTURED BY

THE FULTON COMPANY
75th & National Aves. MILWAUKEE, WISCONSIN

**THE FAMOUS
EKLIPS
SPARK PLUGS**

leak and sootproof,
sure spark, very durable.

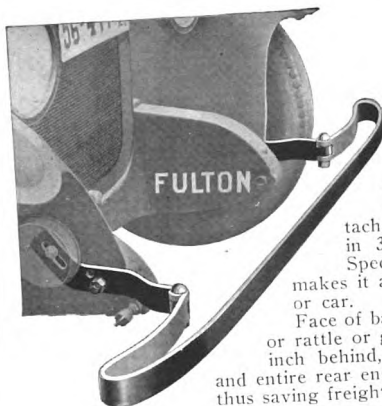
**THE SPECIAL
EKLIPS GIANT**

Suitable for heavy
trucks and high
power cars.

\$1.00 Each

Medium Quality
Eklips "C" only 75c

THE FULTON LINE



The Fulton Universal Spring Bumper

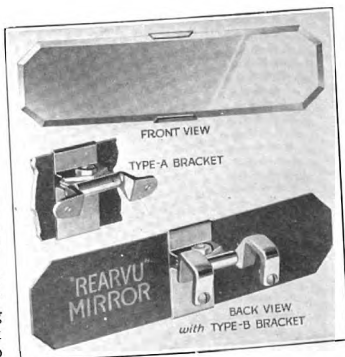
Combines more desirable features than any other bumper on the market. Attached to any car of extending frame type in 30 minutes. Fits any width of frame. Special hinge gives greater resiliency and makes it absorb shock without damage to bumper or car.

Face of bar perfectly smooth. No clamps to catch or rattle or get out of line. 60-inch bar in front, 66-inch behind, thus giving full protection to fenders and entire rear end. Folds into small package in shipping, thus saving freight. In ordering designate as follows:

10N	60" bar nickel Universal fittings.....	\$14.00
11B	60" black Universal fittings.....	12.00
13BN	60" B. & N. Universal fittings.....	12.00
16N	66" bar nickel Universal fittings.....	15.00
17B	66" black Universal fittings.....	13.00
19BN	66" black and nickel Universal fittings.....	13.00

Auto Rearview Mirror

Attached to windshield frame of any open car and bow on closed car. Reflects objects in rear directly to eye of driver. Adjustable to any angle. Can be used with windshield either open or closed. Can be quickly and firmly fixed in place; will not loosen or vibrate. Handsomely finished with plate glass mirror, strong frame, special finish on back to prevent discoloring. Very attractive addition to any car.



Made in Type A for closed cars and Type B for open cars. Sizes $2\frac{1}{2} \times 10"$. Price \$3.50. Dealers, ask your jobber. If he cannot supply you, write direct.

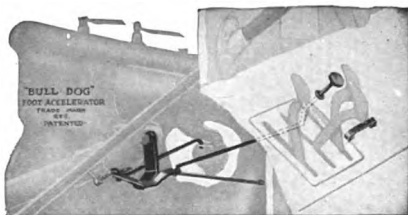
Manufactured by Automotive Accessories, Inc., Kokomo, Ind.

The Fulton Company
75th and National Milwaukee, Wis.

THE **FULTON** LINE

"BULL DOG" Foot Accelerator

Gives Fords the same sensible, easy foot control of speed as that of highest priced cars. Prevents accidents due to killing the engine when driver becomes confused. Special foot rest provided aids in maintaining uniform speed, even on roughest roads. Easy to install and requires no further attention. Absolutely correct in design, substantial, simple and practically unbreakable. Retail price, complete, \$1.50.



"BULL DOG" RUNNING BOARD SUPPORT

We do not enter the field with our RUNNING BOARD SUPPORT with a view of competition in price, but are offering the trade something absolutely new and individual—built neat and durable with that same view of satisfaction that characterizes the rest of the "BULL DOG" PRODUCTS.

The "BULL DOG" RUNNING BOARD SUPPORT is so constructed as to truss itself by attaching only to running boards and hangers—a very important feature. Prevents vibration, racking of fenders, and securely holds the running boards under any load.

No clamps to work loose—and will not interfere with the removal of the rear axle.

Its construction is the strongest ever offered in an item of this kind, 1" T iron being used. Price \$2.25.

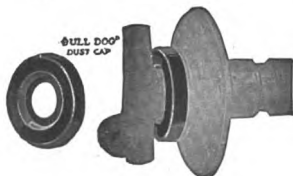
MANUFACTURED BY

THE W. H. THOMAS MFG. CO.

Spencer, Iowa

"BULL DOG" Bearing Protector

Fits all Fords and Chevrolet 490. A useful device, preventing dirt, sand, mud, water and other injurious substances from entering the hub—allows bearings to run in a clean lubricant. Greatly reduces wear on these parts and is of utmost importance to the motorist who tries to keep his car in safe running condition. Price complete, pair, \$1.00.



MANUFACTURED BY

THE W. H. THOMAS MFG. CO.

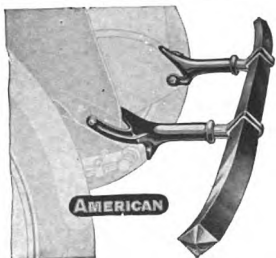
Spencer, Iowa

THE FULTON CO. 75th & National Avenues
Milwaukee, Wisconsin

THE **FULTON** LINE

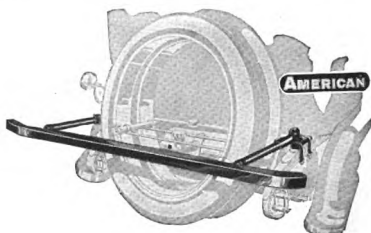
AMERICAN BUMPERS

Specialization guarantees superiority. American Bumpers are manufactured by a firm whose entire efforts are devoted to making bumpers. Trained specialists and years of experience—skilled labor and the finest materials combined are responsible for the excellent reputation American Bumpers maintain with all dealers and motorists.



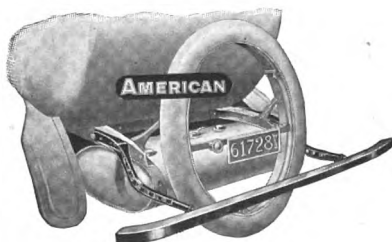
AMERICAN BUICK SPECIAL

Especially designed for 1919, 1920 and 1921 Buick cars only. The construction of the splash pan and fenders of the new Buick makes it very difficult to attach any bracket but a special. When equipped with snubbers, as nearly all are, an American Special bracket is without question the easiest to attach to any on the market. Simply remove the spring bolt nut and replace it with a special cap screw, both furnished with bumper.



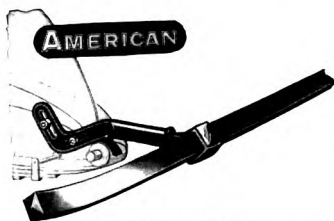
AMERICAN EXTENSION REAR END

An attractive durable, strong rear end bumper especially made to fit all cars with three-quarters of semi-elliptic springs on rear end. Bracket has an adjustable length of 8 to 15 inches.



AMERICAN CANTILEVER REAR

Manufactured principally for rear end of all Buick Sixes. Attached by means of the bolt to the frame, which extends to carry the gasoline tank and holder. By merely drilling two holes this bumper can be used on Reo Six, Peerless, Kissel Kar and other cars having rear cantilever springs.



AMERICAN NU STYLE

Made for Nash and other cars with splash pans and fenders that reach the end of the frame. One of the principal features of the bracket, uncommon to other brackets, is the part that fits over the end of the frame, accepting the weight of all blows at the strong point. Hook bolts fasten around the edge of the frame and are made flat so they will not bulge the splash pan when in position. This bumper is recommended for the Grant Six, Lexington, Haynes, Maxwell, Liberty, Moline Knight, Nash, Overland, Olds, 85-6 and 88-4, Scripps-Booth and Stutz. Also a number of others.



AMERICAN FORD AND CHEVROLET

STEERING WHEELS

Non-tilting and Tilting types, plain or corrugated rims all 11 inches in diameter. Locking device on tilting wheels is positive in action, cannot become unfastened, easily operated. Rims finished in black walnut and enamel. Spider furnished in either malleable or aluminum.

Dealers—Ask Your Jobbers For Prices

Manufactured by

AMERICAN METAL PARTS MFG. CO.
Milwaukee, Wisconsin

Sole Sales Representatives:

THE FULTON CO.

75th and National Aves.

MILWAUKEE, WIS.

THE **FULTON** LINE

MONROE SELF OILING PUMPS

Most Tire Pumps are discarded before they wear out. The life of the average pump is quite short, because the pump lasts only until its leather washer has dried out and cracked. With every stroke of the piston the patented Monroe Self Oiling device feeds lubricant onto the washer of the Monroe Pump. This not only lengthens the life of the washer but lubricates the plunger path as well. A ball check valve prevents return of air into the pump. Top cap and ferrule on handle bright nickeled.

No. 10—Monroe Self-Oiling Pump, $1\frac{1}{4}$ in. cylinder $21\frac{7}{8}$ in. long. Black enamel—folding base, nickel plated.

Price \$2.75

No. 15—Monroe Self-Oiling Pump, $1\frac{1}{2}$ in. cylinder, $21\frac{7}{8}$ in. long, black enamel, folding base, nickel plated.

Price \$3.00

No. 350—A good pump with which to meet competition — without self-oiling features, 20 in. over all, black enamel. Packed loose, 50 in box.

Price \$2.00

Jobbers get our proposition on Ford Brake Shoes and Spot Light Brackets

MANUFACTURED BY

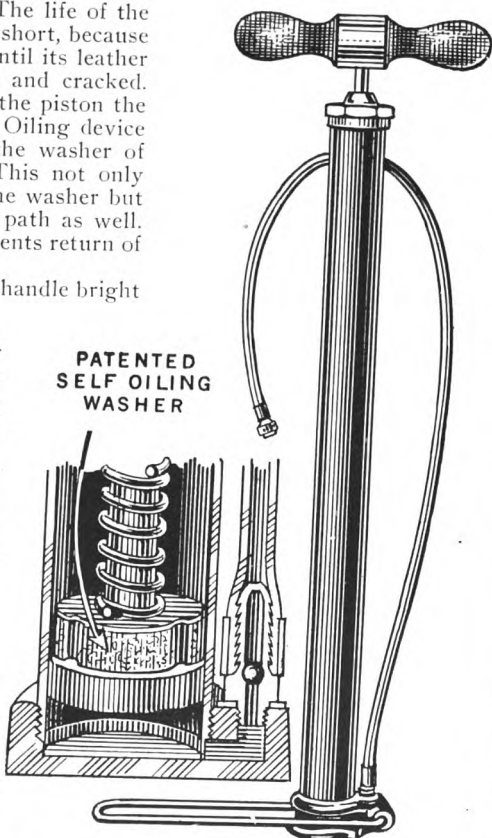
MONROE AUTOMOTIVE EQUIPMENT MFG. CO., Monroe, Mich.

Sole Sale Representatives

THE FULTON COMPANY

75th & National Avenues

MILWAUKEE, WIS.

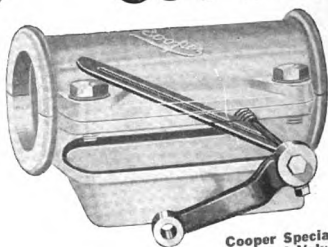




HERE TO STAY

Cooper

CUT OUT

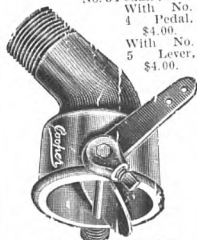


Cooper Special
Cutout Valve
Patented

Cooper Screw Type Muffler Cutout for BUICK CARS

It's made of best malleable iron—withstands heat and vibration—attaches easily. Just remove the standard plug from the exhaust pipe, screw in the COOPER "SCREW TYPE" and the job is done for good. It can't come loose—can't rattle or squeak nor cause any annoyance whatever. The bell shape forms a megaphone—causes loud tone—simplifies locating weak cylinder, etc.

Prices, Valve only \$3.00. With No. 3 Pedal \$3.50.
With No. 4 Pedal \$4.00.
With No. 5 Lever \$4.00.



Patent Applied For

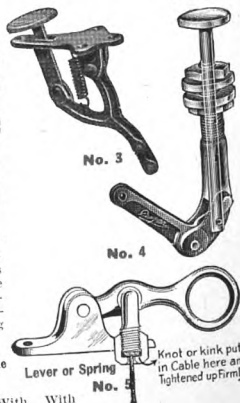
The Easy Selling Profitable Line

Here's the cutout that the whole motor world knows, respects and endorses—the COOPER "SPECIAL" CUTOUT—used on the motor cars of men who buy for true and consistent performance.

For the COOPER "SPECIAL" CUTOUT has proved its character—has won recognition—and is here to stay. It blasts out the carbon—reveals the secrets of the motor—the missing plug—the weak cylinder—and it makes the engine snapper—full of pep—ready to jump in a twinkling—with speed and power galore.

Your Jobber can supply you—if not Write Us Direct Giving Us His Name.

SIZES	Complete		With	
	Valve Only	3 Pedal	No. 4 Pedal	No. 5 Lever
1½"	\$2.50	\$3.00	\$3.50	\$3.50
1¾"	3.00	3.50	4.00	4.00
2"	3.50	4.00	4.50	4.50
2¼"	4.00	4.50	5.00	5.00
2½"	5.00	5.50	6.00	6.00



No. 3

No. 4

Lever or Spring No. 5

Knot or kink put in Cable here and Tightened up Firmly

MANUFACTURED BY

COOPER MFG. CO.
THE FULTON COMPANY

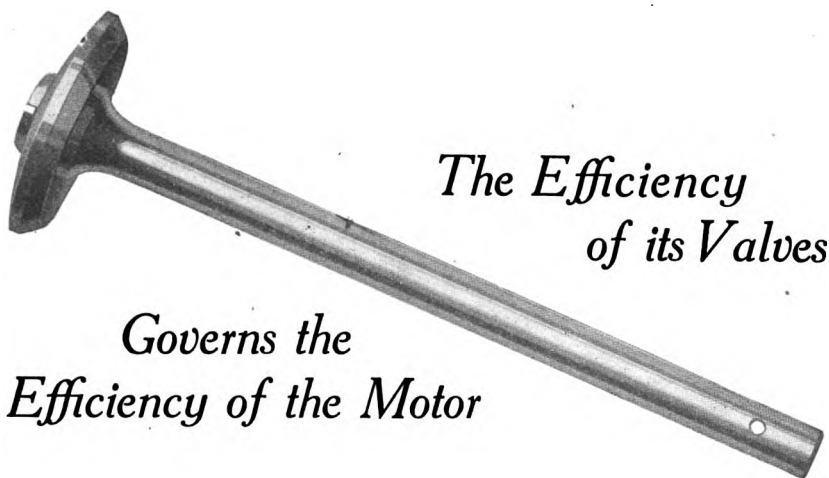
Department B

Sales Managers

Marshalltown, Iowa
Milwaukee, Wis.

SUPER

Guaranteed Not To Warp



*The Efficiency
of its Valves*

*Governs the
Efficiency of the Motor*

The Super Valve is the lightest, most durable and most efficient valve ever produced. Because of their light weight, Super Valves are easier on the cams, springs and timing gears, and therefore they are easier on the motor. They have less weight than the types of valves now in general use, but more power, greater strength and longer life. Super Valves are made in any size and of any alloy steel to suit your requirements.

Super Valve Mfg. Co., 3037 North Clark St., Chicago, Ill.

VALVE

Please mention The Automobile Trade Directory

VALVES, Muffler Cut-Out, for Fords

Am-Pe-Co Sales Co., Marshalltown, Ia.
"Marshalltown." (See page 487.)

Au-To Compressor Co., Wilmington, O. "Oro."

Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.

Badger Mfg. Corp., Milwaukee, Wis.
(See page 171.)

Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y. "G. P.")

Empire—See S. B. R. Specialty Co.

Emco Mfg. Co., Binghamton, N. Y. "Taber." (See page 521.)

Ewald—See Zinke Co.

G. P.—See Cassidy Co.

Goodrich-Lenhardt Mfg. Co., Hamburg, Pa.
(See page 987.)

Gould Mfg. Co., Seneca Falls, N. Y.

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.

Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

Marshalltown—See Am-Pe-Co Sales Co.

Metal Stamping Co., 18th St. & East Ave., Long Island City, N. Y.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Waltham, Mass. "Mosco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Oldberg Mfg. Co., Detroit, Mich.
(See page 663.)

Oro—See Au-To Compressor Co.

Perkins-Campbell Co., Cincinnati, O.
(See page 115.)

Petry Co., N. A., 1307 Race St., Philadelphia, Pa.

Piel Co.—See Cassidy Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Roberts, G. E.—See Zinke Co.

Romort Mfg. Co.—See Zinke Co.

S. B. R. Specialty Co., 17-19 Princeton St., East Orange, N. J. "Empire."

Sunvold Co., H. H., Sacred Heart, Minn.

Taber—See Emco Mfg. Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 263.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald"; also Roberts, G. E., Milwaukee, Wis.)
(See pages 688 and 689.)

VALVES, Needle

American Brass & Iron Co., Detroit, Mich. (See page 205.)

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.

Detroit Brass Works, 99 Hobart St., Detroit, Mich.

Detroit Brass & Malleable Works, Holden & Greenwood Aves., Detroit, Mich.

Lunkenheimer Co., Beekman & Waverly Sts., Binghamton, N. Y.

Powell Co., Wm., 3535 Spring Grove Ave., Cincinnati, O.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, Oil Tube for Fords

(Valve to be attached to oil tube to permit easy cleaning of tube)

Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. "Shurflo."

(See pages 172 and 173.)

Shurflo—See Gemco Mfg. Co.

VALVES, POPPET—See Valves, Engine Poppet**VALVES, PRESSURE REGULATING—See Regulators, Pressure****VALVES, RESERVE—See Valves, Two Way Tank****VALVES, RESERVE, FOR FORDS—See Cocks, Fuel Supply****VALVES, SAFETY—See Valves, Steam Safety; also Valves, Tire****VALVES, STEAM PRESSURE CONTROL—See Controllers, Vulcanizer Steam Pressure****VALVES, Steam Safety**

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.

Caldwell, R. L., 74 Cortlandt St., New York, N. Y. "Notaleak."

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.

Notaleak—See Caldwell, R. L.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, Steam Throttle

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, TANK—See Valves, Two Way Tank; also Cocks, Spring Key; also Cocks, Standard; also Valves, Needle**VALVES, Tire**

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Day."
(See page 229.)

Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Whistler."

Day—See Atlas Auto Supply Co.

Griffin Mfg. Co., 113 State St., Boston, Mass.

Holt Auto Devices Co., Conway Bldg., Chicago, Ill.

Newsom Valve Co., 2714 La Salle St., St. Louis, Mo.

Pulverman—See Tirometer Valve Corp. of America.

Schrader's Son, A., Brooklyn, N. Y.
(See page 506.)

Standard Tire Valve Co., 233 Broadway, New York, N. Y.

Tirometer Valve Corp. of America, Charleston, W. Va. "Pulverman."

Whistler—See Automatic Safety Tire Valve Corp.

Everything is listed under the NOUN or principal word

Fansteel Valves



Weigh less
Increase speed
Increase power
Save gasoline
Will not pit nor warp

We are prepared to serve you in any quantity. Service and quality have the same high standard.

FANSTEEL PRODUCTS COMPANY
INC.
NORTH CHICAGO, ILL.

The Champion Reboring Tool



Rebores and Refinishes
Model T Ford Cylinder Blocks in Thirty Minutes

Only tool permitting reboring all cylinders with only one setting of locating plates. Equipped with two cutter heads that rough cut and finish in one operation.

Extra finish cutter head with each outfit.

Champion Power Feed 22-in. Drill Press

A modern up-to-date Power Drill combining, at a remarkably low price, all the graduated and automatic features of higher priced Drills. Distance Spindle to Base, 43"; Spindle Travel, 12"; Feed, .004", .012", .020".

CHAMPION MANUFACTURING CO.
2908-10 West Fletcher Street, Philadelphia, Pa.

"HANSEN" Automatic Air Valves

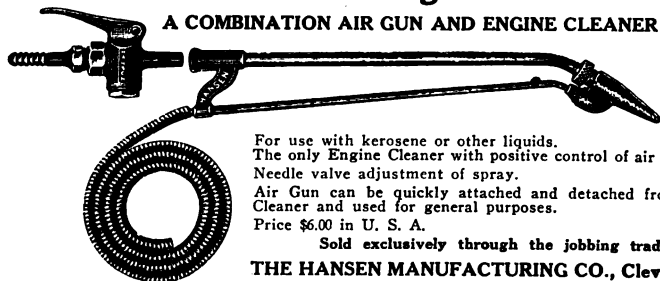


MODEL "C" \$2.50 in U. S. A.

The Rubber Washer does not come in contact with the tire valve stem—consequently it lasts indefinitely. The HANSEN Automatic Air Valve is instantaneous in action and does not leak.

"HANSEN" Engine Cleaner

A COMBINATION AIR GUN AND ENGINE CLEANER



For use with kerosene or other liquids. The only Engine Cleaner with positive control of air and liquid. Needle valve adjustment of spray. Air Gun can be quickly attached and detached from Engine Cleaner and used for general purposes. Price \$6.00 in U. S. A.

Sold exclusively through the jobbing trade.

THE HANSEN MANUFACTURING CO., Cleveland, O.

Please mention The Automobile Trade Directory

VALVES, Two Way Tank*(Fuel Reserve Valves or Cocks)*

Automobile Appliance Corp., 22 Custom House St., Boston, Mass. "Reservo."
 Breeze Mfg. Co., 255 South St., Newark, N. J.
 Clark & Co., A. C., 1035 E. 76th St. (Grand Crossing), Chicago, Ill. "Hi-Lo."
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Hi-Lo—See Clark & Co.
 Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 177.)
 Lunkenheimer Co., Beckman & Waverly Sts., Cincinnati, O. "Quadlock."
 Quadlock—See Lunkenheimer Co.
 Reservo—See Automobile Appliance Corp.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)

VALVES, TWO WAY TANK, FOR FORDS
—See Cocks, Fuel Supply**VALVES, Water Circulation Regulating***(Dash controlled valve for regulating the circulation of water in the cooling system.)*

Johnson Co., 1909 E. Forest Ave., Detroit, Mich. "Temp-Trol."
 Temp-Trol—See Johnson Co.

VANADIUM

American Vanadium Co., Vanadium Bldg., Pittsburgh, Pa.
 Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

VANADIUM STEEL—See Steel, Vanadium

VANITY CASES—See Cases, Toilet and Card

VAPOR ENGINE STARTERS—See Starters, Gasoline or Vapor Engine

VAPORIZERS, Motor Boat Kerosene

Olsen—See United States Vaporizer Co.
 United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."

VAPORIZERS or MIXING VALVES, GASOLINE—See Valves, Motor Boat Generator

VARNISH BRUSHES—See Brushes, Paint and Varnish

VARNISH DRYING ROOMS—See Rooms, Paint and Varnish Drying

VARNISH PRESERVATIVES—See Polishes, Automobile Body

VARNISH REMOVERS—See Removers, Paint, Enamel and Varnish

VARNISHES

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
 Akron Varnish Co., Akron, O.
 American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Kleekapar."
 American Paint Products Co., 736 E. Wabash Ave., Chicago, Ill.
 American Varnish Co., 1138 N. Branch St., Chicago, Ill.
 Anglo-American Varnish Co., 53-63 Johnson St., Newark, N. J.
 Armitage & Co., John L., 245 Thomas St., Newark, N. J.
 Atlantic Varnish Works, 2829 Lester St., Richmond, Va. "Ultra-Blac."
 Ault & Willborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
 Auto-Lak—See Johnson & Son.
 Auto Products Mfg. Co., Buffalo, N. Y. "Renu-R-Kote."
 Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 303.)
 B. P. S.—See Patterson-Sargent Co.
 Barrett Varnish Co., 233 W. Lake St., Chicago, Ill.
 Bay State—See Wadsworth, Howland & Co.
 Beckwith-Chandler Co., 320 Fifth Ave., New York, N. Y.
 Benoit, Constant A., Brooklyn, N. Y. (See page 227.)
 Berry Bros., 211 Lieb St., Detroit, Mich.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O.
 Bissell Varnish Co., Bridgeport, Conn.
 Boston Varnish Co., (Everett Sta.), Boston, Mass. "Kyanize."
 Brooks & Co., Clarence, 249-77 Chestnut St., Newark, N. J.
 Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.
 Bulls-Eye—See Zinsser & Co.
 Bunker Hill—See New England Oil, Paint & Varnish Co.
 Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
 Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y. "Kismet."
 Chi-Var-Co—See Chicago Varnish Co.
 Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."
 Cincinnati Varnish Co., 211 South St., Cincinnati, O.
 Cleveland Varnish Co., Cleveland, O. "Freelastick." (See page 1027.)
 Columbus Varnish Co., Columbus, O. "Peerless Mirroroid." (See page 361.)
 Da Cote—See Murphy Varnish Co.
 Devoe & C. T. Raynolds Co., F. W., 101 Fulton St., New York, N. Y.
 Dibble Color Co., 445 Larned St., W., Detroit, Mich.
 Effecto—See Pratt & Lambert.
 Elmendorf Varnish Co., 848 Larrabee St., Chicago, Ill.
 Empire Varnish Co., 2633-42 E. 76th St., Cleveland, O.
 Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
 Flood & Conklin Co., 136 Chestnut St., Newark, N. J. "Radium."
 Forest City Paint & Varnish Co., 2334 Lakeside Ave., Cleveland, O.
 Freelastick—See Cleveland Varnish Co.
 French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.
 Gillespie & Son, Chas. H., 19 Dey St., Jersey City, N. J.

Everything is listed under the NOUN or principal word

C
L
E
V
E
L
A
N
DFOR THE
AUTOMOBILE
MANUFACTURER

VARNISHES

and

ENAMELS

FOR THE
AUTOMOBILE
ACCESSORY
MANUFACTURERTHE CLEVELAND VARNISH CO.
CLEVELANDC
L
E
A
R
=
B
L
A
C
K

Makes an End of Ignition Troubles

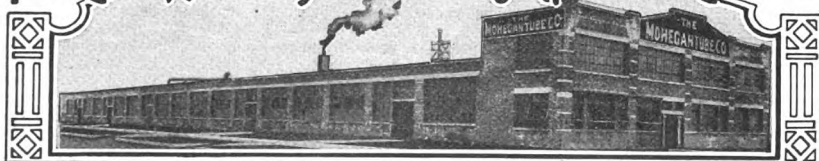
The present-day low grade gasoline, which causes so much trouble for the average ignition system, has an abundance of real power 'way down in its sluggish depths.

And it was left for Philbrin to get at and utilize this latent source of energy. The invention of the Philbrin contact maker and condenser has resulted in a new conception of ignition efficiency. The Philbrin spark is intensified, big-bodied, rendering—greatly increasing the horsepower and flexibility of a gasoline motor. Fuel mileage is increased. By the use of the High Frequency System (a feature of Philbrin Duplex Ignition) all starting difficulties are overcome and plug fouling is prevented.

You can install Philbrin Ignition in place of any system you are now using.

PHILBRIN CORPORATION
507 S. Broad St., Kennett Square, Pa.

FOR COLD ROLLED STEEL TUBES OF QUALITY—CONSULT



THE MOHEGAN TUBE COMPANY

306 Scott Avenue

Brooklyn, N. Y.



Please mention The Automobile Trade Directory

VARNISHES (Continued)

- Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Gold Cross—See Stewart-Mowry Co.
 Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
 Hardy Paint & Varnish Co., Oakwood & N. C. R. R., Toledo, O.
 Harland & Son, Wm. Genesee St. & Erie Canal, Buffalo, N. Y.
 Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa. "Vitrolac."
 Heath & Milligan Mfg. Co., 1833 Seward St., Chicago, Ill.
 Hildreth Varnish Co., 90 West St., New York, N. Y.
 Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
 Howe Varnish Co., 258 Norman Ave., Brooklyn, N. Y.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind.
 Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Auto-Lak."
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Kismet—See Chase, Roberts & Co.
 Kleckspar—See American Chemical & Mfg. Co.
 Kyanize—See Boston Varnish Co.
 Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill.
 Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
 Microlike Mfg. Co., 203 Eighth St., Long Island City, N. Y.
 Mountain Varnish & Color Works, Toledo, O.
 Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J. "Da-Cote."
 New England Oil, Paint & Varnish Co., Everett, Mass. "Bunker Hill."
 Nice, Eugene E., 363-74 S. Second St., Philadelphia, Pa.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
 (See page 277.)
 Norwesco—See Northwestern Chemical Co.
 Nubian Paint & Varnish Co., 1856 LeClaire Ave., Chicago, Ill.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 Panvar Co., Bulletin Bldg., Philadelphia, Pa.
 Parrott Varnish Co., 453 N. Washington Ave., Bridgeport, Conn.
 Patterson-Sargent Co., E. 38th & St. Clair Sts., Cleveland, O. "B. P. S."
 Peerless Mirroroid—See Columbus Varnish Co.
 Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Efecto."
 Queen City Varnish Co., Cincinnati, O.
 Quickwork—See Standard Varnish Works.
 Radium—See Flood & Conklin Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Renu-R-Kote—See Auto Products Mfg. Co.
 Royal Varnish Co., Lake Shore Ave., Toledo, O.
 Schrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.
 Servall—See Willey Co.
 Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Stewart-Mowry Co., 3218 Shields Ave., Chicago, Ill. "Gold Cross."
 Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.
 Tylastic—See Western Reserve Varnish Co.
 U-Auto-Varnish Co., Altadena, Cal.
 Ultra-Blac—See Atlantic Varnish Works.
 Valentine & Co., 456 Fourth Ave., New York, N. Y. "Vanadium."
 Vanadium—See Valentine & Co.
 Vitrolac—See Harrison Works.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."
 Western Reserve Varnish Co., Cleveland, O. "Tylastic."
 Wheeler Varnish Works, 2260 Elston Ave., Chicago, Ill.
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Servall."
 Zinsner & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

VARNISHES, Airplane

- Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 718-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
 (See page 363.)
 American Emallite Co., 549 W. Washington St., Chicago, Ill. "Emallite."
 Berry Bros., 211 Lieb St., Detroit, Mich. "Luxeberry."
 Boston Varnish Co. (Everett Sta.), Boston, Mass. "Kyanize."
 Brooklyn Varnish Mfg. Co., 35 Nostrand Ave., Brooklyn, N. Y. "Kauri."
 Chemical Products Co., 80 Charles River Rd., Cambridge, Mass.
 Cleveland Varnish Co., Cleveland, O.
 (See page 1027.)
 Conover Co., C. E., 101 Franklin St., New York, N. Y. "Nalad."
 Emallite—See American Emallite Co.
 Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass.
 Howe Varnish Co., 353 Norman Ave., Brooklyn, N. Y. "Wing-Spar."
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Kauri—See Brooklyn Varnish Mfg. Co.
 Kyanize—See Boston Varnish Co.
 Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
 Luxeberry—See Berry Bros.
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.
 Nalad—See Conover Co.
 National Aeroplane Co., 549 W. Washington St., Chicago, Ill.
 Nubian Paint & Varnish Co., 1856 LeClaire Ave., Chicago, Ill.
 Pratt & Lambert, 75 Tonawanda St., Buffalo, N. Y. "P & L."
 P & L—See Pratt & Lambert.
 Rexpar—See Sherwin-Williams Co.
 Schrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.
 Sherwin-Williams Co., 601 Canal Rd., N. W., Cleveland, O. "Rexpar."
 Titanine, 2 Rector St., New York, N. Y.
 Valentine & Co., 456 Fourth Ave., New York, N. Y. "Valspar."
 Valspar—See Valentine & Co.
 Wing-Spar—See Howe Varnish Co.

Everything is listed under the NOUN or principal word

Seamless Steel TUBING

For Automobile and Mechan-
ical Construction.

STEEL AND IRON

for all special purposes.

Great assortment and large
stock carried.

E. K. Morris & Co.

311-313-316-317 W. 24 St.

CINCINNATI, Ohio

NATIONAL SPRINGS

for
PASSENGER CARS
AND TRUCKS

also
SPRINGS
for REPLACEMENT

NATIONAL SPRING CO.
New Castle Indiana



SALES BRANCHES

Double Seal Ring Co.

Atlanta, Ga.....66½ N. Forsyth Street
Baltimore, Md.....1710 N. Charles Street
Boston, Mass.....107 Massachusetts Ave.
Buffalo, N. Y.....1377 Main Street
Chicago, Ill.....1517 South Michigan Ave.
Cleveland, Ohio.....1841 Euclid Avenue
Dallas, Texas.....208 Browder Street
Denver, Colorado....430 Eighteenth Street
Detroit, Mich...4602 Grand River Ave., W.
El Paso, Texas.....412 Myrtle Avenue
Fresno, Cal.....1922 Tuolumne Street
Fort Worth, Texas....316-328 Lake Street
Houston, Texas.....1212 Main Street
Kansas City, Mo.....214 E. 17th Street
Little Rock, Ark.....414 Louisiana Street
Los Angeles, Cal.....603 West Pico Street
Memphis, Tenn.....128 Monroe Avenue
Milwaukee, Wis.....160 Mason Street
Minneapolis, Minn...825 Hennepin Avenue
New Orleans, La....808 St. Charles Street
New York, N. Y.....1834 Broadway
Oklahoma City, Okla....121 West Third St.
Omaha, Neb.....415 South 24th Street
Pittsburgh, Pa...Hiland and Baum Streets
206 Werner Building
Portland, Ore.....413½ Burnside Street
Sacramento, Cal.....1008 J Street
San Antonio, Tex....314 Kampmann Bldg.
San Francisco, Cal.....1124 Polk Street
Seattle, Wash.....1213 Pine Street
Stockton, Cal.....106 N. California Street
Tacoma, Wash.....771 Broadway
Tulsa, Okla.....208 E. 2nd St.
Waco, Texas.....100 Provident Building
Windsor, Ont., Canada.19 E. Sandwich St.

The Double Seal Ring Co. carries a complete stock of all sizes of Double Seal Piston Rings at each of the above Branches, where the jobbing trade can get its supply quickly.

Double Seal Ring Co.

General Sales Offices:

1517 S. Michigan Ave., Chicago, Ill.

VARNISHES, FOR FORDS—See Paints and Varnishes

VASES, FLOWER—See Holders, Bouquet

VEHICLE MOTION RECORDERS—See Recorders, Vehicle

VELVETS, Upholstery

Collins & Alkman Co., 8-12 E. 34th St., New York, N. Y.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 514.)

VENEER ROOFING—See Panels, Wood

VENTILATING HOOD FASTENERS FOR FORDS—See Fasteners, Ventilating Hood

VENTILATING HOOD HOLDERS FOR FORDS—See Fasteners, Ventilating Hood

VENTILATORS, Cowl

Hervis Co., Garnett J., 1211-15 Filbert St., Philadelphia, Pa.

Morris Co., George W., Layard & Douglas Ave., Racine, Wis.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Petry Co., N. A., 1307 Race St., Philadelphia, Pa.

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Rostand Mfg. Co., Milford, Conn.

Tuckwell, Wm. S., 20 High St., Merrimacport, Mass.

VENTILATORS, COWL, for Fords

H. & D. Co., Crawfordsville, Ind. (See page 1031.)

Morris Co., George W., Layard & Douglas Ave., Racine, Wis.

Petry Co., N. A., 1307 Race St., Philadelphia, Pa.

VENTILATORS, FORE-DOOR—See Ventilators, Limousine

VENTILATORS, Limousine and Fore-Door

Attwood Brass Works, Grand Rapids, Mich. (See page 479.)

Cowles & Co., C., New Haven, Conn.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Long, Charles R. A., 387 S. East St., Indianapolis, Ind.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)

VENTILATORS, Wind Shield

Higgin Mfg. Co., Newport, Ky. "Mac."
Mac—See Higgin Mfg. Co.

Morris Hardware Co., Connellsville, O.
"Ventor."
Ventor—See Morris Hardware Co.

VENTILATORS, Wind Shield, for Fords

Banker Windshield Co., Ellsworth & Negley Ave., Pittsburgh, Pa.

Big B—See Bruening Windshield Co.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.

Gahn-McCormick Co., 806 E. Main St., Streator, Ill. (See page 249.)

Gasco—See General Auto Specialty Co.

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Motor Products Corporation, 11803 Mack Ave., Detroit, Mich. (See page 843.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)

Ospeco—See Michigan Auto Products Co.

Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.

Richards-Wilcox Mfg. Co., Third St. & C. B. & O. R. R. Tracks, Aurora, Ill.

Star-K—See Stark-Inland Machine Works.

Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

VIBRATORS, MASTER—See Coils, Spark

VIBRATORS, Master, for Fords

(See also Coils, Spark)

Connecticut Telephone & Electric Co., Meriden, Conn.

Crowe—See Lisle Mfg. Co.

Fansteel Product Co., North Chicago, Ill. (See page 1025.)

Lisle Mfg. Co., Clarinda, Ia. "Crowe."

New York Coll Co., 338-40 Pearl St., New York, N. Y. "TX."

TX—See New York Coll Co.

Temco Electric Motor Co., 921 Sugar St., Leipsic, O.

WISE STANDS—See Stands, Aircraft Propeller Vise

WISES, Battery

(To hold the battery secure and protect it from damage while withdrawing a cell)

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

WISES, BENCH—See Vises, Machinists'

WISES, Machinists'

Ajax—See Bonney Forge & Tool Works.

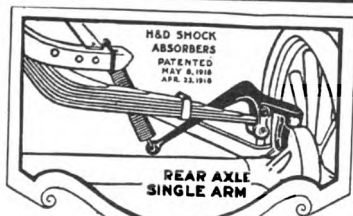
Anchor—See Prentiss Vise Co.

Athol Machine Co., Athol, Mass. "Simpson." "Standard."

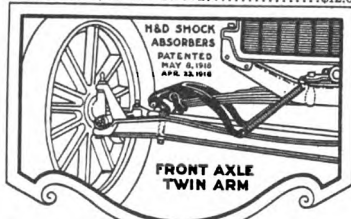
Barbour-Stockwell Co., 205 Broadway, Cambridgeport, Mass.

Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Cort St., Irvington, N. J. "New Idea."

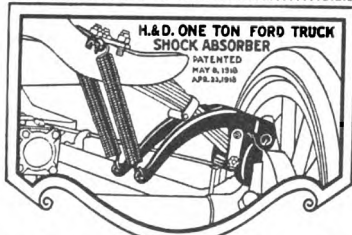
Everything is listed under the NOUN or principal word



Single arm per set of four.....\$12.00



Twin arm per set of four.....\$12.00



One Ton Truck per set of four.....\$25.00

H&D

SHOCK ABSORBERS

CRAWFORDSVILLE, IND.

In Canada

RICHARDS-WILCOX COMPANY
London, Ontario

H&D SHOCK ABSORBERS are made in single and twin arm types for all Ford Cars. There is a special type for the Roadster, Touring Car, Coupe, Sedan, Taxi, Commercial Delivery and One Ton Truck.

Mechanically Perfect

They are guaranteed against ALL defects, both of material and workmanship. Any part that does not give satisfaction will be cheerfully replaced, when returned, charges paid, free of charge.

30 Days' Trial Guarantee

Dealers are authorized to put H&D's on any Ford. Should the owner decide to have them removed after the 30 days' trial, we give a new set for every one so removed and our draft for \$3.00 to pay for the dealer's time and trouble.

24 Hour Parts Service

H&D distributors are located conveniently to all dealers in the United States and Canada. They carry a complete stock of parts for 24-hour service. Parts broken or giving unsatisfactory wear are replaced free.

SERVICE PARTS FOR H & D SHOCK ABSORBERS

Single Arm



Casting

- No. 11 Left Front Casting.....\$1.80
- No. 12 Right Front Casting.....1.80
- No. 13 Right Rear Casting.....1.80
- No. 14 Left Rear Casting.....1.80

Springs

- No. 3 Sedan or Taxi Spring.....\$0.70
- No. 4 Touring Spring......70
- No. 5 Roadster Spring......70



- Front Hook.....\$0.25
- No. 01 Front Hook.....\$0.25
- No. 02 Rear Hook......25
- No. 03 Sedan Hook, Rear......25

- No. 16 Perch, Drop Forge.....\$0.90
- No. 51 3x3 Front Lock Bolt with castle nut......35
- No. 52 3 1/2x3 Rear Lock Bolt with castle nut......35

Twin Arm



Casting

- No. 231 Front Casting.....\$1.80
- No. 232 Rear Casting.....1.80

Springs

- No. 6 Delivery Springs.....\$0.45
- No. 7 Sedan or Taxi Springs......45
- No. 8 1/2 Touring or Coupe Springs......45
- No. 10 Roadster Spring......45



Front Spring Clip Rear Hook

- No. 23 Front Spring Clip.....\$0.25
- No. 24 Rear Hook......25

Truck Arm



- No. 241 Truck Casting.....\$0.75
- No. 242 Truck Perch Casting.....1.35
- No. 243 Rear Hook......90
- No. 53 Lock Bolt with castle nut......90
- No. 21 Perch Bolt......70
- No. 33 Spring......90

NOTE: No. 16 Perch and Nos. 51 and 52 Lock Bolts are the same size for both single and double arm absorbers. No. 8 1/2 Springs are regular front equipment for all twin arm types. No. 4 Springs are regular front equipment for all single arm types. Front truck, half set, the same equipment as twin arm touring.

WRITE FOR OUR JOBBERS AND DEALERS NET PRICE LISTS ON SETS AND PARTS

Please mention The Automobile Trade Directory

VICES, Machinists' (Continued)

Bonney Forge & Tool Works, Allentown, Pa.
 "Hercules," "Ajax," "Champion."
 Braunsdorf-Mueller Co., 305 Madison St.,
 Elizabeth, N. J.
 Bridgeport Engineering Co., Bridgeport, Conn.
 Bull Dog—See Prentiss Vise Co.
 Champion—See Western Tool & Mfg. Co.
 Champion—See Bonney Forge & Tool Works.
 Detroit Garage Equipment Co., 406 E. Jefferson
 Ave., Detroit, Mich.
 Emmert Mfg. Co., W. Main St., Waynesboro,
 Pa.
 Erie Tool Works, 11th & French Sts., Erie, Pa.
 F & R—See Fulton Machine & Vise Co.
 Fisher & Norris, 37-45 Fair St., Trenton, N. J.
 Fulton Machine & Vise Co., Lowville, N. Y.
 "Star," "Peerless," "F & R."
 G-S—See Germanow-Simon Machine Works.
 Germanow-Simon Machine Works, 53 Mill St.,
 Rochester, N. Y. "G-S."
 Goodell-Pratt Co., Greenfield, Mass.
 Hercules—See Bonney Forge & Tool Works.
 Hollands Mfg. Co.—See Jonas, C. N. & F. W.
 Howard Iron Works, Chicago & Granger Sts.,
 Buffalo, N. Y.
 Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.
 Jonas, C. N. & F. W., 908 S. Dearborn St.,
 Chicago, Ill. (Sales Representatives for
 Hollands Mfg. Co., Erie, Pa.)
 (See page 344.)
 Lewis—See Prentiss Vise Co.
 Luther Grinder Mfg. Co., Milwaukee, Wis.
 Monarch—See Prentiss Vise Co.
 National Metal Products Co., 1016 E. 11th St.,
 Indianapolis, Ind.
 New Britain Machine Co., Chestnut St., New
 Britain, Conn.
 New Idea—See Barnett Foundry & Machine
 Co.
 Parker Co., Charles, 48 Elm St., Meriden,
 Conn.
 Peerless—See Fulton Machine & Vise Co.
 Phoenix Hardware Co., 49-53 Illinois St., Buf-
 falo, N. Y.
 Prentiss Vise Co., 110 Lafayette St., New
 York, N. Y. "Anchor," "Bull Dog," "Lewis,"
 "Monarch," "Rapid Transit."
 Rapid Transit—See Prentiss Vise Co.
 Reed Mfg. Co., W. Eighth St., Erie, Pa.
 Rock Island Mfg. Co., Rock Island, Ill.
 (See page 1033.)
 Schartow Mfg. Co., (So. Milwaukee) Milwau-
 kee, Wis. "Sharto."
 Sharto—See Schartow Mfg. Co.
 Simpson—See Athol Machine Co.
 Standard—See Athol Machine Co.
 Star—See Fulton Machine & Vise Co.
 Velox Vise Co., Lowville, N. Y.
 Ware, J. L., 201 Harvard St., S. E., Minne-
 apolis, Minn.
 Western Tool & Mfg. Co., Springfield, O.
 "Champion."
 Yost Mfg. Co., Meadville, Pa.
 (See page 1033.)

Erie Tool Works, 11th & French Sts., Erie, Pa.
 Fisher & Norris, 37-45 Fair St., Trenton, N. J.
 Greenfield Tap & Die Corp., Greenfield,
 Mass. (See page 915.)
 Ideal—See Orange Machine & Mfg. Co.
 Magic—See Prentiss Vise Co.
 Mark Mfg. Co., 111 W. Washington St., Chi-
 cago, Ill.
 Monarch—See Prentiss Vise Co.
 Orange Machine & Mfg. Co., 280 S. Jefferson
 St., Orange, N. J. "Ideal."
 Oswego Tool Co., 119-27 W. First St., Oswego,
 N. Y.
 Parker Co., Charles, 48 Elm St., Meriden, Conn.
 Phoenix Hardware Co., 49-53 Illinois St., Buf-
 falo, N. Y.
 Prentiss Vise Co., 110 Lafayette St., New
 York, N. Y. "Blake," "Monarch," "Rex,"
 "10th Century," "Shepard," "Magic."
 Reed Mfg. Co., W. Eighth St., Erie, Pa.
 Rex—See Prentiss Vise Co.
 Rock Island Mfg. Co., Rock Island, Ill.
 (See page 1033.)
 Saunders Sons, D., 27 Atherton St., Yonkers,
 N. Y.
 Shepard—See Prentiss Vise Co.
 10th Century—See Prentiss Vise Co.
 Williams & Co., J. H., 38 Richard St.,
 Brooklyn, N. Y. (See page 1073.)
 Yost Mfg. Co., Meadville, Pa.
 (See page 1033.)

VICES, Piston, for Fords

Auto Mechanics Tool Co., 2501 S. Washington
 St., Peoria, Ill. "Peoria."
 Auto Metal Parts Co., 624 Michigan Ave., Chi-
 cago, Ill.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Continental Auto Parts Co., 1807 E. 17th
 St., Columbus, Ind. (See page 79.)
 Danielson Tool Co., Fulton St., Wausau, Wis.
 Dearborn Equipment Co., Kalamazoo,
 Mich. (See page 429.)
 Dee Tool Co., John, 1511 Third Ave., Rock
 Island, Ill.
 Detroit Garage Equipment Co., 406 E. Jeff-
 erson Ave., Detroit, Mich.
 Garage Equipment Co., 241 Fourth Ave., S.,
 Minneapolis, Minn.
 Liberty Metal Products Co., Front St. & First
 Ave., Berea, O.
 Littell Machinery Co., 532-34 Washington St.,
 Spokane, Wash.
 Miles Mfg. Co.—See Zinke Co.
 Peoria—See Auto Mechanics Tool Co.
 Railway Specialty Co., Atchison, Kans.
 "Rysco."
 Rysco—See Railway Specialty Co.
 Southern Machine & Tool Co.—See Tutthill
 Sales Co.
 Storm Mfg. Co., Dept. L, Minneapolis,
 Minn. (See page 623.)
 Tutthill Sales Co., St. Louis, Mo. (Sole
 Distributors for Southern Machine &
 Tool Co., St. Louis, Mo.) (See page 641.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill.
 (Sales Department for Carswell-Hammond
 Mfg. Co., Boone, Ia.; also Miles Mfg. Co.,
 Newton, Ia.)

VICES, Pipe

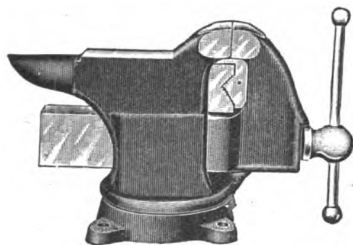
Armstrong Mfg. Co., 335 Knowlton St., Bridge-
 port, Conn.
 Athol Machine Co., Athol, Mass.
 Blake—See Prentiss Vise Co.
 Dikeman Mfg. Co., Merwin St., Norwalk, Conn.
 Efficient Vise & Wrench Co., 4207 Clark Ave.,
 Cleveland, O.

VICES, Portable

Autovise—See Rock Island Mfg. Co.
 Bonney Forge & Tool Works, Allentown, Pa.
 "Champion," "Standard."
 Champion—See Bonney Forge & Tool Works.
 F & R—See Fulton Machine & Vise Co.
 Fulton Machine & Vise Co., Lowville, N. Y.
 "F & R."

Everything is listed under the NOUN or principal word

ROCK ISLAND AUTOVISE

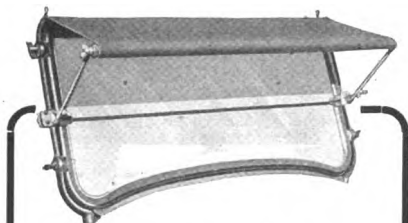


A Combination Pipe and Anvil Vise—particularly suitable for auto repair work—cast from high-grade steel and iron, which produces the high quality which is known in all **ROCK ISLAND VISES**.

VISES *A Type and Size for Every Service*

NEW YORK, 113-Chambers St. CHICAGO, 180-North Market St.

ROCK ISLAND MFG. CO.
Rock Island, Ill.



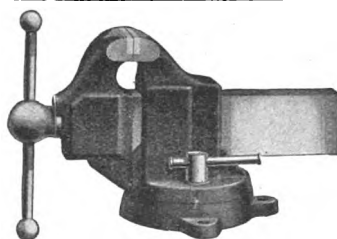
HAMILTON VISION SHIELD

The One Shield Which Does the Work
Shuts out blinding sunlight instead of feebly modifying it as colored glass does. Prevents eye strain. Made of selected top material. Adjusted to any position in a few seconds. Locks rigidly—no flap, no rattle. When not in use rolls neatly up under auto top. Two standard sizes will fit 90% of cars.

The Big Selling Accessory for 1921

Dealers—Cash in on our advertising and live sales helps. Write for full information at once. Jobbers in all distributing centers will supply the trade.

HAMILTON PRODUCTS CO.
413-423 S. 5th St., Minneapolis, Minn.

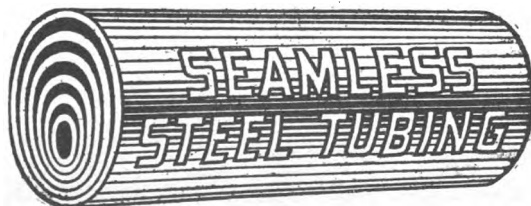


*When you need a vise
buy a*

YOST

YOST MANUFACTURING CO.
Meadville, Pa.
U. S. A.

*Manufacturers of High Grade
Vises and Anvils*



SEAMLESS STEEL TUBING

*Large Stock Carried in
Warehouses
Try Us for Store or Mill
Shipments*

WRITE NEAREST OFFICE

EDGAR T. WARD'S SONS COMPANY
Boston New York Newark Philadelphia Detroit Chicago

Please mention The Automobile Trade Directory

VICES, Portable (Continued)

Parker Co., Charles, 48 Elm St., Meriden, Conn.
 Rock Island Mfg. Co., Rock Island, Ill.
 "Autovise." (See page 1033.)
 Standard—See Bonney Forge & Tool Works.

VICES, TRANSMISSION DRUM REPAIRING FOR FORDS—See Clamps or Vises, Transmission Drum Repairing**VISORS, SUN—See Visors, Wind Shield****VISORS, Top**

(Leather or fabric strip to attach to top to close up space between top and wind shield. For Wind shield Visors—See Visors, Wind Shield.)

A. & E. Auto Top Co., 33-36 E. Cross St., Ypsilanti, Mich.
 Albany Machine Tool Co.—See Cassidy Co.
 Big B—See Bruening Windshield Co.
 Bondy Windshield Deflector Co., 5101 Carnegie Ave., Cleveland, O.
 Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Albany Machine Tool Co., Albany, N. Y. "Ramsey.")
 Eclipse—See Lonney & Carmichael.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 172 and 173.)
 Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 1007.)
 Lonney & Carmichael, 4835 Woodward Ave., Detroit, Mich. "Eclipse." (See page 1035.)
 Martin Auto Specialty Co., 31 Forest Rose Ave., Lancaster, O.
 Nathan Novelty Mfg. Co., 55 Fifth Ave., New York, N. Y. (See page 313.)
 National—See Hillman Mfg. Co.
 Ramsey—See Cassidy Co.
 Road-View—See Smith & Co.
 Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Road-View."
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.
 Toptex—See Gemco Mfg. Co.
 Williams Mfg. Co., 125 W. 35th St., Los Angeles, Cal.

VISORS, Top, for Fords

(Leather or fabric strip to attach to top to close up space between top and wind shield); for Wind Shield Visors—See Visors, Wind Shield.)

Acorn Buggy Co., 500 Eggleston Ave., Cincinnati, O.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3A."
 Atlas Specialty Mfg. Co., 16-22 E. 24th St., Chicago, Ill. (See page 307.)
 Baeb & Schen, 500-10 Webster St., Cincinnati, O. (See page 983.)
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)

Esco—See Economy Seat Co.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 172 and 173.)
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O.
 Kozy-Kar—See Stephens Rubber Co.
 Lockwood Mfg. Co., Kansas City, Mo.
 Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 399.)
 Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitzwell."
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
 Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb.
 Perkins-Campbell Co., Cincinnati, O. (See page 115.)
 Powers Mfg. Co., Waterloo, Ia. (See page 581.)
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E." (See pages 125, 143, 307 and 983.)
 Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Kozy-Kar."
 3A—See American Automobile Accessories Co.
 Toptex—See Gemco Mfg. Co.

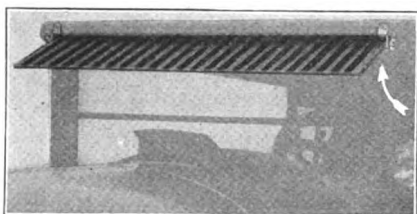
VISORS, Wind Shield

(Metal frame covered with leather fabric, celluloid, etc., to be attached to the wind shield. For Top Visors—See Visors, Top)

Accessory Supply Co., 1218-20 E. 12th St., Kansas City, Mo. "Asco."
 Alastic Tire Cushion Co., 1419-21 Locust St., St. Louis, Mo. "Budd."
 Albany Machine Tool Co.—See Cassidy Co.
 All-Weather—See Auto Visor Co.
 Asco—See Accessory Supply Co.
 Auto Radiator Shutter Co., 21 Callahan Bk., Dayton, O. "Doty."
 Auto Sun-Shade Mfg. Co., 1237 S. Figueroa St., Los Angeles, Cal. "Comfy."
 Auto Sun Shield Corp., 380 Main St., East Orange, N. J. (See page 1037.)
 Auto Visor Co., 3418 N. 18th St., Philadelphia, Pa. "All-Weather." (See page 985.)
 Brinck Mfg. Co., 2418 Fifth Ave., Moline, Ill.
 Budd—See Alastic Tire Cushion Co.
 Cathcart Co., C. A., 161 Massachusetts Ave., Boston, Mass. "Triplex." (See page 1059.)
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sole Distributors for Albany Machine Tool Co., Albany, N. Y. "Ramsey.")
 Clearview Mfg. Co., 1400 Hennepin Ave., Minneapolis, Minn.
 Code Mfg. Co., Chicago, Ill. (See pages 845 and 1075.)
 Comfy—See Auto Sun-Shade Mfg. Co.
 De Luxe—See Wedler-Shuford Co.
 Detko Products Co., 555 Turk St., San Francisco, Cal.
 Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.
 Detroit Radiator & Specialty Co., 4835 Woodward Ave., Detroit, Mich.
 Diamond Jay Dee Co., 2335 Michigan Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

LAFAYETTE AUTO VISOR



Protects the Driver's Vision from Rain,
Snow, Sun, Glaring Headlights;
Prevents Accidents

Made in black, green and white, and green and tan, size 40 inches wide. Rigid steel frame braced in center. Will not rattle, sag, buckle or vibrate. Cover can be taken off instantly to be cleaned. Extra covers in any of above colors. Each \$3.00. West of Denver, \$3.30.

Adjustments to any angle without getting out of the car. Patented universal bracket fits any car.

Dealers and Jobbers
write or wire for Ter-
ritory and Discounts

LIST PRICE

\$5.00

West of Denver

\$5.50

HORAT & CO.,

Lafayette, Ind.,

U. S. A.

ECLIPSE VISOR FOR OPEN and CLOSED CARS

Protects against *Sun—Storms—Street Lights*

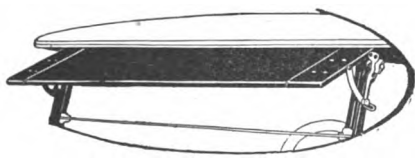
WELL MADE—EASILY INSTALLED—ADJUSTABLE

PRICE \$7.00. Attractive Discounts to Dealers

LONNEY & CARMICHAEL

4835 WOODWARD AVENUE

DETROIT, MICHIGAN



National Windshield Visor

National Visors are adjustable to meet the driver's line of vision. It protects windshield from sun-glare, head-light glare, rain, mist, or snow.

Made of special pressed steel, baked black enamel on top, satin green underneath, with two-inch adjustment at each end to allow for the various widths of windshields. Attachments are black enameled and held in place by upper wing nuts on each side of windshield post. An auxiliary clamp fastens those to windshield post at lower end. The quadrants by which the Visor is raised or lowered are brass, heavily nickel plated.

Size No. 1, adjustable from 36" to 40"
Size No. 2, adjustable from 39½" to 43½"
Size No. 3, adjustable from 43½" to 46"

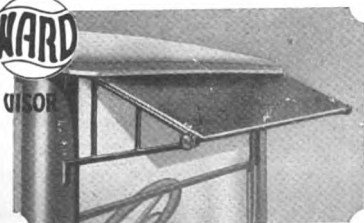
No. 2 fits ninety per cent of all cars. This being the case, dealers are required to favor only No. 2. No. 1 for narrow windshields. No. 3 for extra wide windshields. When ordering, specify open or enclosed car.

Wire or Write for Our Distributors' Proposition

List Price \$12.50. "Special" for Fords \$2.50.

Hillman Mfg. Co., Inc.

2317 East 16th St., Los Angeles, Calif.



IT ROLLS UP

WARD VISOR

Puts the sun in the shade

Illustration shows one of our closed car models. We manufacture visors of many types, listing from

\$3.60 to \$12.50

Special types made to fit the sloping type windshield, such as the Willys-Knight Sedan, carried in stock. Let us know your requirements.

A motor car equipped with a WARD VISOR has had its appearance improved.

E. T. WARD MFG. CO., Oak Park, Ill.

Please mention The Automobile Trade Directory

VISORS, Wind Shield (Continued)

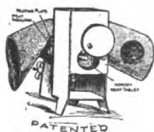
Dickinson & Co.—See Reliance Sales & Promotion Co.
 Doty—See Auto Radiator Shutter Co.
 Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.
 Gabel Co., A. H. Goodman St. and Monroe Ave., Rochester, N. Y. (See page 983.)
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See pages 172 and 173.)
 Hamilton Products Co., 413-23 S. Fifth St., Minneapolis, Minn. (See page 1033.)
 Hardware Mfg. Co., 1410 Dearborn St., Seattle, Wash. "Ideal."
 Hillman Mfg. Co., 2317 E. 10th St., Los Angeles, Cal. "National." (See page 1035.)
 Hooker-Marsh Mfg. Co., 214 E. Broadway, Muskogee, Okla. "Marsh."
 Hopewell Bros., Watertown, Mass. (See page 641.)
 Horat & Co., Lafayette, Ind. "Lafayette." (See page 1035.)
 Ideal—See Hardware Mfg. Co.
 Jackknife—See Roberts Mfg. Co.
 Jessop & Thompson, 1421 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Pickard Co., T. W., Columbus, O.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Rain-Sun Vision Shield Co., Los Angeles, Cal. (See page 345.)
 Lafayette—See Horat & Co.
 Laughlin & Schuler, Kimball Bldg., Evansville, Ill.
 Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 1007.)
 Loudon, Inc., 107 Western Ave., Minneapolis, Minn.
 McKinnon Dash Co., Buffalo, N. Y. (See page 403.)
 Marsh—See Hooker-Marsh Mfg. Co.
 Maurer Co., O., 1317 Bushwick Ave., Brooklyn, N. Y. "No Glare." (See page 997.)
 Merit Co., San Francisco, Cal.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 555.)
 Model & Metalwork Mfg. Co., 120 Opera Pl., Cincinnati, Ohio. "See-Wel."
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 399.)
 National—See Hillman Mfg. Co.
 Noglare—See Maurer Co.
 Picard Co., T. W.—See Jessop & Thompson.
 Powers Mfg. Co., Waterloo, Iowa. (See page 551.)
 Presto—See Metal Specialties Mfg. Co.
 Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.
 Ramsey—See Cassidy Co.
 Ray-N-Shield—See Western Windshield Works.
 Reliance Sales & Promotion Co., 1016-18 Nicollet Ave., Minneapolis, Minn. (Sole Distributors for Dickinson & Co., Minneapolis, Minn.)
 Rex Mfg. Co., Connersville, Ind. (See page 985.)
 Roberts Mfg. Co., New Haven, Conn. "Jackknife." (See page 1001.)
 Royal—See United Glass & Glazing Co.

Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Se-Clear—See Zenith Products Co.
 See-Wel—See Model & Metalwork Mfg. Co.
 Toptex—See Gemco Mfg. Co.
 Treichel, T. J., 366 Golden Gate Ave., San Francisco, Cal.
 Triplex—See Cathcart Co., C. A.
 Troy Sun Shade Co., 141 Garfield Ave., Troy, O.
 U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis. (See page 1061.)
 United Glass & Glazing Co., 660 Golden Gate Ave., San Francisco, Cal. "Royal."
 Ward Mfg. Co., E. T., Oak Park, Ill. (See page 1035.)
 Wedler-Shuford Co., 19th & Locust Sts., St. Louis, Mo. "De Luxe."
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn. "Ray-N-Shield."
 Windshield Awning Co., St. Augustine, Fla.
 Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn.
 Zenith Products Co., Spring Lake, Mich. "See-Clear."

VOLTMETERS — See Ammeters; also Gages, Battery**VULCANIZER STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure****VULCANIZER THERMOMETERS—See Thermometers, Vulcanizer****VULCANIZER TOOLS—See Tools, Tire Vulcanizing****VULCANIZERS, Portable**

Adamson Mfg. Co., East Palestine, O.
 Arso Mfg. Co.—See Howard Lubricants Co.
 Champion, F. M., 14-16 Elizabeth St., Utica, N. Y.
 Continental Auto Parts Co., 1807 E. 17th St., Columbus, O. (See page 79.)
 5-Minute—See Shaler Co.
 Gwynn-Bacon Vulcanizer Co., 2504 Cass Ave., St. Louis, Mo.
 Horsey Products Co., 4815 Lexington Ave., Cleveland, O. (See page 1037.)
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. (Sole Distributors for Arso Mfg. Co., Schenectady, N. Y.)
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 243.)
 Its-It—See Premier Electric Co.
 Junior—See Cleveland Auto Specialty Co.
 Lazarus Mfg. Co., 224 High St., Cleveland, O. "Two-In-One."
 Magic Auto Devices Co., Lynbrook, N. Y.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Vulcar."
 P. I. W.—Peckstein Iron Works.
 Peckstein Iron Works, Ninth & Johnson Sts., Keokuk, Iowa. "P. I. W."

Everything is listed under the NOUN or principal word

Model B

**INSULATED
HEAT
WITHOUT GASOLINE**
No Odor No Smoke

IT COVERS THE HOLE AND FILLS IT

HORSEY HEAT UNIT VULCANIZER

Perfectly vulcanizes punctures and blowouts in Inner Tubes. Is made of steel and fits your tool kit. Uses a Heat unit tablet which is not affected by dampness. Insulated heating plate makes it impossible to burn tube. Packed in boxes with 8 Heat Unit Patches, 8 Heat Unit Tablets, with cement, buffer and instructions complete.

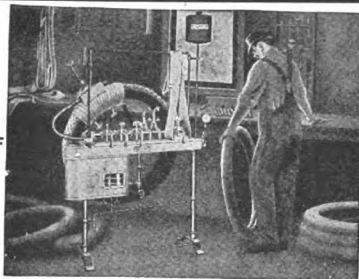
We also manufacture a model for vulcanizing cuts up to 9 inches long.

For particulars write to

The Horsey Products Company

4815 LEXINGTON AVE.

CLEVELAND, OHIO, U. S. A.

**A Money-Maker for Every Garage**

Progressive garage men everywhere are installing a SHALER Shop Vulcanizer and making big money.

A SHALER will do all the work you care to do—and will vulcanize as many as 12 casings and 200 tubes a day. Yet it costs only about one-fifth as much as any other vulcanizer of equal capacity.

SHALER**Steam Vulcanizer**

Is the only vulcanizer that has Automatic Heat Control, cannot overcure or damage tires. Occupies small floor space. Uses the famous Wrapped-Tread Method of repairing casings—no experienced operators necessary. Your ordinary help can learn to operate it.

Ask Your Jobber—Write for Catalog

of the complete line of SHALER Vulcanizers—steam, gasoline, gas, dry fuel, alcohol and electric, for tire repair shops, garage and motorists' use.

C. A. SHALER COMPANY, 901 Fourth St., Waupun, Wis.

**AUTO SUN SHIELD**

Patented and Trade-Mark Registered in the Patent Office

Highly Attractive Dealer Proposition

The original Sun Shield—it's tailor made. Eliminates all glare. Simple vision adjustment. Will not rattle or vibrate. Rust-proof. Adjustable Brass frame is black enameled. Top of cover shade is of black material; underside, green. Rigidly reinforced with patented non-warping panel board. No sag, flap or wrinkles. Open and closed car models.

Get full particulars of the most attractive dealer proposition ever offered

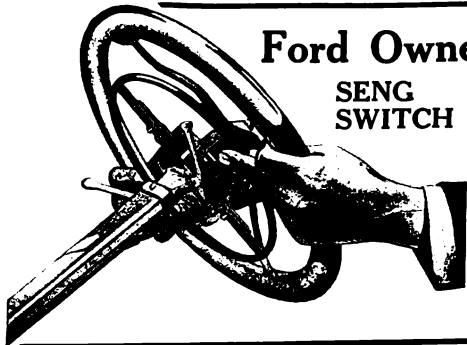
Auto Sun Shield Corporation
380 Main Street, East Orange, N. J.

Ford Owners Buy on Sight!**SENG SWITCH**

**For Sounding
ELECTRIC HORN
on Ford Cars**

Big profits! Quick sales! Installed by buyer. Write at once for descriptive folder and our SPECIAL proposition to dealers.

Seng Auto Device Co.
1452 Dayton St. CHICAGO



Please mention The Automobile Trade Directory

VULCANIZERS, Portable (Continued)

Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.
 Premier Electric Co., 8800-10 Ravenswood Ave., Chicago, Ill. "Its-It."
 Radio—See Milwaukee Auto Specialty Co.
 Risk's Riskless Vulcanizer Co., Plymouth Bldg., Minneapolis, Minn.
 Safety Vulcanizer Mfg. Co., Brown & Jefferson Sts., Waupun, Wis.
 Shaler Co., C. A., 907 Fourth St., Waupun, Wis. "Vul-Kit," "5-Minute." (See pages 353, 1037 and 1047.)
 Super-Vulcanizer Mfg. Co., 146 South West Temple, Salt Lake City, Utah.
 Two-in-one—See Lazarus Mfg. Co.
 Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.
 V Air Valve & Mfg. Co., 1648 Tremont St., Denver, Colo.
 Vul-Kit—See Shaler Co.
 Vulcar—See National Rubber & Specialties Co.

VULCANIZERS, Portable, for Fords

Horsey Products Co., 4815 Lexington Ave., Cleveland, O. (See page 1037.)
 Lazarus Mfg. Co., 224 High St., Cleveland, O. "Two-in-one."
 Magic Auto Devices Co., Lynbrook, N. Y.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
 Shaler Co., C. A., 907 Fourth St., Waupun, Wis. (See pages 353, 1037 and 1047.)
 Two-in-one—See Lazarus Mfg. Co.

VULCANIZERS, Shop

Acme Supply Co., 113 Dexter St., Ionia, Mich.
 Adams-Barre Co., 1242 N. High St., Columbus, O.
 Akron Rubber Mold & Machine Co., 917 Sweetser Ave., Akron, O. "Tip-Top."
 Akron-Williams—See Williams Foundry & Machine Co.
 All-In-One—See Miller, Chas. E.
 Allen—See Diamond Mfg. Co.
 Altenburg Tire Equipment Co., 218 E. Third St., Davenport, Ia.
 Anderson Steam Vulcanizer Co., 365 Woodward Ave., Indianapolis, Ind.
 Arthur Vulcanizing Machine Co., Griswold St., Warren, O.
 Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Lowell."
 Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.
 Badger—See Tire Repair Equipment Co.
 Biggs Boiler Works Co., 1007 Bank St., Akron, O.
 Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.
 Burge Machine Works, 318-30 N. Jefferson St., Chicago, Ill. "Excelsior."
 Diamond Mfg. Co., Des Moines, Ia. "Allen."
 Dri-Kure-Retreder—See Western Vulcanizer Mfg. Co.
 Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.
 Excelsior—See Burge Machine Works.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Harkins Machine Co., T. L., 46 Farnsworth St., Boston, Mass.
 Hayner—See Mason Mfg. Co.
 Hayward Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
 Heintz & Co., James C., 1319 Main Ave., Cleveland, O.
 Hibbs Rubber Co., 200 S. Boaz St., Fort Worth, Tex.
 Jim Dandy—See Scheffer & Rossum Co.
 Legnard Co., A. B., Waukegan, Ill. "Vulcan."
 Lowell—See Auto-Tire Vulcanizing Co.
 Mason Mfg. Co., Mason, Mich. "Hayner."
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind. "All-In-One."
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."
 National Rubber Mold Co., 2763 Blake St., Denver, Colo.
 O'Neil Tire & Rubber Co., 350-54 Bowery St., Akron, O.
 P. S. M. Co., 3110-36 Snelling Ave., Minneapolis, Minn. "Progressive." (See page 1047.)
 Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.
 Progressive Mfg. Co., 468 64th Ave., West Allis, Wis.
 Progressive—See P. S. M. Co.
 Radium—See Milwaukee Auto Specialty Co.
 Redex—See Rubber Products & Machinery Co.
 Reliance Mfg. Co., Broadway & Glenarm St., Pasadena, Cal.
 Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."
 Scheffer & Rossum Co., 104-08 E. Tenth St., St. Paul, Minn. "Jim Dandy."
 Sepco—See Globe Machine & Stamping Co.
 Shaler Co., C. A., 901 Fourth St., Waupun, Wis. (See pages 353, 1037 and 1047.)
 Soper Vulcanizer Mfg. Co., 110 E. 11th St., Los Angeles, Cal.
 Sunlite Co., McKinney, Tex.
 Tin-Top—See Akron Rubber Mold & Machine Co.
 Tire Repair Equipment Co., 732 College Ave., Appleton, Wis. "Badger."
 Vanderpool Vulcanizing Co., 723 W. Mulberry St., Springfield, O.
 Vulcan—See Legnard Co.
 Western Rubber Mold Co., 15 N. Summit St., Chicago, Ill. (See page 657.)
 Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dri-Kure-Retreder."
 Wilkinson-Beaver Mfg. Co., St. Louis, Mo.
 Willey, Chas. A., 338-40 W. Main St., Battle Creek, Mich.
 Williams Foundry & Machine Co., 100 Walnut St., Akron, O. "Akron-Williams."
 Wood-Craft Co., 1486 Marshall Ave., St. Paul, Minn.
 Zwebell Bros. Co., 482 Milwaukee St., Milwaukee, Wis.

VULCANIZING CEMENT—See Cement Tire Repair

Everything is listed under the NOUN or principal word



Metal Tool and Battery Boxes

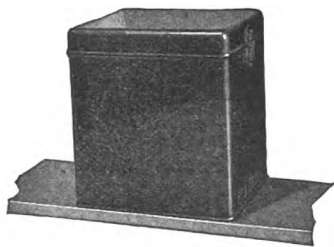


B-2296

GLOBE Metal Tool & Battery boxes are made by the largest makers of pressed steel boxes for automobiles, trucks and tractors. Sturdy construction, pleasing lines and splendid finish make GLOBE Boxes the standard of quality.

The B-2296 Box is by far the most popular size of the GLOBE Boxes. It was designed especially for use on Ford cars but is in general use on other small cars. The depth of this box allows doors to clear easily and still there is room for pump and other essential tools.

The C-108 FBS Battery Box permits the battery of the Ford car to be kept on the running board, thereby enabling the battery to be tested and watered easily.



C-108-FBS



OS-980

The OS-980 Underslung Battery Box was designed to meet the demand for the protection of the Ford Battery without changing the location as originally installed.

Send for copies of our latest circulars
They will interest you

THE GLOBE MACHINE & STAMPING COMPANY
CLEVELAND, OHIO

Please mention The Automobile Trade Directory

VULCANIZING COMPOUNDS—See Compounds, Tire Repair

VULCANIZING CORES—See Molds, Tire Vulcanizing

VULCANIZING MOLDS—See Molds, Tire Vulcanizing

VULCANIZING TOOLS, TIRE—See Tools, Tire Vulcanizing

WARMERS, Hand

(Electric heating devices to attach to Steering Wheel.)

Comfort—See Hainert & Son.

Comfy-Drives—See Main Electric Co.

Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "Comfort."

Hold-Heat—See Russell Electric Co.

Ieco Steerwarms—See Interstate Electric Co.

Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La. "Ieco Steerwarms."

Main Electric Co., Cleveland, O. "Comfy-Drives."

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., Philadelphia, Pa. "Neverout." (See page 563.)

Russell Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heat."

WASH APRONS—See Aprons, Wash

WASH STAND LIGHTS—See Lights, Wash Stand

WASHER CUTTERS—See Cutters, Washer or Gasket

WASHER PUNCHES—See Punches, Arch and Washer

WASHERS, AIR—See Cleaners, Air

WASHERS, Brass and Copper

American Brass Co., Waterbury, Conn. (See page 105.)

Bridgeport Brass Co., Bridgeport, Conn. (See page 757.)

Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1051.)

Plume & Atwood Manufacturing Co., Waterbury, Conn.

Rome Brass & Copper Co., Rome, N. Y.

Steele & Johnson Manufacturing Co., Waterbury, Conn.

Waterbury Manufacturing Co., Waterbury, Conn.

WASHERS, CAR—See Washers, Vehicle

WASHERS, COPPER—See Washers, Brass and Copper

WASHERS, Cork

Acco—See Armstrong Cork Co.

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 403.)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. "Acco."

Diamond Cork Co., S. 11th & Berry Sts., New York, N. Y.

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1043.)

Fieldco—See Field & Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."

Jointite—See Mundet & Son.

Mundet & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. "Jointite." (See page 301.)

Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. (See page 301.)

Right—See Gasket Supply Co.

Spanish-American Cork & Specialty Co. (Westport), Baltimore, Md.

WASHERS, Felt

(For Sheet Felt—See Felt, Sheet)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 403.)

American Felt Co., 100 Summer St., Boston, Mass. (See page 403.)

Atlantic Felt Cutting Co., 93rd St. & Fourth Ave., Brooklyn, N. Y. (See page 407.)

Auburn Leather Goods Co., 1 Miller St., Auburn, N. Y.

Booth Felt Co., 463-73 10th St., Brooklyn, N. Y. (See pages 401 and 1041.)

Braunsdorf, Geo. W., 430 E. 63d St., New York, N. Y.

Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. (See pages 401 and 1041.)

Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1043.)

Fargo Felt Cutting Corp., Brooklyn, N. Y.

Fel-Pro—See Felt Products Mfg. Co.

Felt Products Mfg. Co., 2419 W. 14th St., Chicago, Ill. "Fel-Pro."

Felters Co., Millbury, Mass. (See page 405.)

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1043.)

Fieldco—See Field & Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."

House & Sons, Chas. W., Unionville, Conn.

Lyons Felt Co., Dept. A., 338 Myrtle Ave., Brooklyn, N. Y. (See page 405.)

Monarch Felt Works, 39-45 York St., Brooklyn, N. Y.

Rhocom—See Rhodes & Co.

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Right—See Gasket Supply Co.

Standard Felt Co., West Alhambra, Cal.

Star Felt Cutting Co., 260 69th St., Brooklyn, N. Y.

Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 600.)

Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill.

X. L.—See Excelsior Leather Washer Mfg. Co.

Everything is listed under the NOUN or principal word

"Get the Quality"

Booth
Trade Mark

IF you buy felt washers simply by the price, you can always find some that are lower priced than ours. But if you care for quality and perfection, **BOOTH'S** are the lowest priced washers made.

We operate two complete and well-equipped factories, both with large stocks of felt, ready to be converted into washers, strips, gaskets or other articles, on the shortest notice.

Each factory is in charge of experienced and well-known felt experts. We have no sales offices or agencies.

Please correspond with the nearest factory. You will be answered promptly, and if you send us an order it will give us an opportunity to show you what we mean by Service.

The Booth Felt Company

Incorporated

BROOKLYN

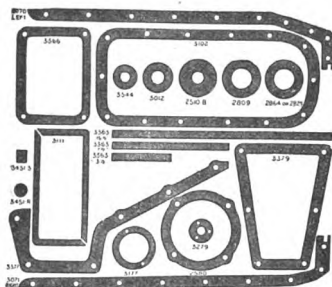
463 to 473 Nineteenth Street

CHICAGO

732 Sherman St., Corner Polk



SET No. 1



FELT WASHERS and GASKETS

For Ford Cars

The gaskets comprising the set illustrated above are made from a quality felt found to be best adapted to the purpose, and of the proper thickness. Sold in lots of 100 and upward. Send for our price list on loose gaskets.



FELT WASHERS

Felt Washer Set for Fords

This set makes it possible for the dealer to stock Ford Washers without the customary stock loss and untidy washer bin. Sold in Cartons of 300 sets.

Sheet Felt

A complete line of sheet felt of all qualities is carried in stock. This merchandise is convenient for special work, such as padding, home-made washers, etc.



T. R. BRAWLEY
FELT SPECIALTIES

275-277 20th Street

Brooklyn, N. Y.

Please mention The Automobile Trade Directory

WASHERS, FELT, FOR FORDS—See Gaskets, Felt

WASHERS, FIBRE—See Fibre, Hard

WASHERS, Finishing

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1051.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
 Read & Co., A. P., 568 W. Washington St., Chicago, Ill.
 Right—See Gasket Supply Co.
 Stanley Works, (Special Productions Dept.), New Britain, Conn. (See page 491.)

WASHERS, Iron and Steel

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.
 Barkelew Metal Products Co., Richard & Bowen Sts., Dayton, O. (See page 607.)
 Bettcher Mfg. Co., 58th St. & P. C. R. R., Cleveland, O.
 Bonkert Corp., Utica, N. Y. (See page 587.)
 Clark Bros. Bolt Co., Milldale, Conn.
 Cleveland Wrought Products Co., W. 58th St., South of Denison Ave., Cleveland, O. (See page 625.)
 Columbus Bolt Works Co., Columbus, O. (See page 147.)
 Die Products Mfg. Co., 11 St. Marys St., Dayton, O.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 Hoefeld & Co., R., Buffalo, N. Y.
 Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 807.)
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 905.)
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 1051.)
 New England Bolt & Steel Co., Bowdoin St. (Everett), Boston, Mass.
 Pittsburg Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
 Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill.
 Reliance Mfg. Co., Massillon, O. (See page 1045.)
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Right—See Gasket Supply Co.
 Sessions & Son, J. H., Bristol, Conn.
 Smith Co., Thomas, 13 Cypress St., Worcester, Mass.
 Stanley Works (Special Productions Dept.), New Britain, Conn. (See page 491.)
 Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
 Upson Nut Co., Unionville, Conn.
 Worcester Stamped Metal Co., Worcester, Mass. (See page 1051.)
 Wrought Washer Mfg. Co., 46 S. Bay St., Milwaukee, Wis.

WASHERS, Leather

Algoo—See Auburn Leather Goods Co.
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algoo."
 Chicago Rawhide Co., 1301 Elston Ave., Chicago, Ill.
 Detroit Leather Works, 863 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 901.)
 Evans-Lawrie Co., 708-10 Beacon St., Boston, Mass. (Eastern Distributors for "G & K" Washers.) (See page 115.)
 Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L." (See page 1043.)
 Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 1043.)
 Fieldco—See Field & Co.
 G. & K.—See Graton & Knight Mfg. Co.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K."
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. (See page 119.)
 Hoefeld & Co., R., 61-69 Carroll St., Buffalo, N. Y.
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass. (See page 115.)
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. (See page 751.)
 Kendrick Valve & Washer Co., 213 E. Water St., Syracuse, N. Y.
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Marsh Co., Charles W., 37 Hudson St., Muskegon, Mich.
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Right—See Gasket Supply Co.
 Simco—See Simplex Mfg. Co.
 Simplex Mfg. Co., Auburn, N. Y. "Simco."
 Sutherland Co., F. L., 139 Beaubien St., Detroit, Mich. (See page 609.)
 X. L.—See Excelsior Leather Washer Mfg. Co.

WASHERS, LOCK—See Nuts, Lock

WASHERS, MICA—See Mica

WASHERS, OVERHEAD—See Washers, Vehicle

WASHERS, PUMP—See Washers, Leather; also Washers, Tire Pump

WASHERS, RUBBER—See Rubber, Hard

WASHERS, SPRING—See Washers, Steel Spring

WASHERS, STEEL—See Washers, Iron and Steel

Everything is listed under the NOUN or principal word



This is display cabinet No. 10

NEVER SLIP



LOCK WASHER

The display stand shown above is in all good auto supply shops. There's a special, convenient box of assorted sizes for garages, etc. Ask about "Assortment No. 5"

Write for price lists and complete information
National Umbrella Frame Company
30th & Thompson Sts. Philadelphia, Pa.

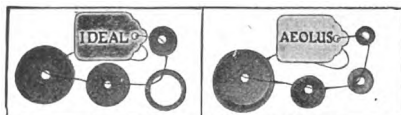


X-L BRAND Leather Washers

NOTE TO TRADE

We are specialists in this line and are prepared to fill your order for any quantity. Estimates furnished on any kind of fibre, paper, felt or leather washers—also on leather specialty work of all kinds.

We manufacture complete tire pump sets. Write us for list.



**EXCELSIOR LEATHER WASHER
MFG. CO.**

ROCKFORD

ILLINOIS

Gaskets, Cup Leathers, Small Straps, Special Shapes.

Pump Leathers in Sets for Tire Pumps a Specialty

One single shipment of "FIELDCO" Leather Washers on our fast truck, over five million actual count.

*Just one
link of
our
equipment
for prompt
and
efficient
service*



*Largest
manufacturers of
Leather,
Fibre,
Paper, Felt
and Cork
Packings
in the
Country*

No order too small or none too large for this plant. Quality, accuracy and dependable service guaranteed. It will pay you to get our prices before placing your orders.

R. B. FIELD & COMPANY,

Worcester, Mass.

Please mention The Automobile Trade Directory

WASHERS, Steel Spring

Barnes Co., Wallace, Bristol, Conn.
 Hobbs Mfg. Co., 24 Salisbury St., Worcester, Mass.
 Positive Lock Washer Co., Newark, N. J.
 (See page 1045.)

WASHERS, Tire Pump Connection

Remort Mfg. Co.—See Blake Co.
 Blake Co., 1522-25 Michigan Ave., Chicago, Ill. (Sales Department for Remort Mfg. Co., Oakfield, Wis.)
 (See pages 698 and 699.)

WASHERS, Tuffing

Robertson Steel & Iron Co., W. F. Elm & Commerce Sts., Cincinnati, O.

WASHERS, Vehicle

American Textile Mfg. Co., Cleveland, O.
 "No-Mar."
 Arkaco—See Rennous, Kleinle & Co.
 Blake—See Star Brass Works.
 Boston Auto-Washer Co., 236 Commercial St., Boston, Mass.
 Cataract Auto Washer Co., 1269 Western Ave., Topeka, Kans. (See page 1045.)
 Fittitt—See Rennous, Kleinle & Co.
 Fuller Brush Co., 74 Union Pl., Hartford, Conn.
 Hahn, Arthur W., 1-7 Dominick St., New York, N. Y.
 Healey Mfg. Co., 10-12 India Sq., Boston, Mass.
 Hecla—See Mooers-Wright Co.
 Her-Gen Mfg. Co., 57-59 E. 43rd St., Chicago, Ill.
 Hicks Brush Co., Howard A., 826 18th St., Denver, Colo.
 Hygienia Brush Co., Worcester, Mass. "Ideal."
 Ideal—See Hygienia Brush Co.
 Jonas, C. N., & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Turbine Auto Washer Co., Three Rivers, Mich.) (See page 346.)
 Lampkin, Walter L., 921 Walnut St., Kansas City, Mo.
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for U. S. Specialty Co., Boston, Mass. "Hecla." (See page 187.)
 Muller, Edward, 6631 Hudson Bld., West New York, N. J. "Reliable."
 No-Mar—See American Textile Mfg. Co.
 North Ridge Brush Co., 252 Clark St., Freeport, Ill.
 O. K.—See Rippley Mfg. Co.
 Osborne Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.
 Peerless—See Tempco Mfg. Co.
 Perfection—See Ryan & Long.
 Raban, W. A., Broad St., Port Chester, N. Y. "Westchester."
 Reliable—See Muller, Edward.
 Rennous, Kleinle & Co., 3221 Frederick Ave., Baltimore, Md. "Arkaco," "Fittitt."
 Rich Mfg. Co., 1777 Broadway, New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rippley Mfg. Co., Grafton, Ill. "O. K."
 Ryan & Long, 842 College Ave., Appleton, Wis. "Perfection."

Sanitar Brush Co., 2235 S. Wabash Ave., Chicago, Ill.
 Schaffer Co., N. S., 62 Vienna St., Rochester, N. Y. "Superior."
 Sealy-Jones & Co., 99 E. Jackson St., Chicago, Ill.
 Smith & Co., Jon. N., 2461 E. Grand Blvd., Detroit, Mich.
 Star Brass Works, 2120 Carroll Ave., Chicago, Ill. "Blake."
 Superior—See Schaffer Co.
 Tempco Mfg. Co., 2227 Ogden Ave., Chicago, Ill. "Peerless."
 Turbine Auto Washer Co.—See Jonas, C. N. & F. W.
 U. S. Specialty Co.—See Mooers-Wright Co.
 Westchester—See Raban, W. A.
 Whitting—J. J. Adams Co., John L., Boston, Mass. (See page 169.)
 Wizard Washer & Wringer Works, 201 N. Peterboro St., Canastota, N. Y.

WASHING BRUSHES—See Washers, Vehicle**WASTE CANS—See Cans, Waste****WASTE, Cotton**

(For picking rags—See Wipers)

American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.
 Autopak—Royal Mfg. Co.
 Basco—See Baylis Sanitary Supply Co.
 Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."
 Bishop Mfg. Co., Robert, 157 W. Sixth St. (S. Boston), Boston, Mass.
 Blakely & Son, John, 1089 Germantown Ave., Philadelphia, Pa.
 Chicago Sanitary Rag Co., 2157-43 S. Loomis St., Chicago, Ill.
 Dumee Son & Co., 105-07 S. Third St., Philadelphia, Pa.
 Egan Waste Co., 19 Bunting Slip, New York, N. Y.
 Empire Waste Corp., Stevens Bldg., Detroit, Mich.
 Estes Mills, Fall River, Mass.
 Fidelity—See Hagy Waste Works.
 Fulton Bag & Cotton Mills, 320 Wythe Ave., Brooklyn, N. Y.
 Grapes & Co., E., 94-96 Avon St., Hartford, Conn.
 Hagy & Son, Clayton L., 16th & Carpenter Sts., Philadelphia, Pa.
 Hagy Waste Works, J. Milton, Philadelphia, Pa. "Fidelity." (See page 301.)
 Hoffman-Corr Mfg. Co., 318 Lafayette St., New York, N. Y.
 Interwoven Mills, Martinsburg, W. Va.
 Kanned Kotton—See Teepe Waste Co.
 Masco—See Massasoit Mfg. Co.
 Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."
 Mill Remnants Co., 19 Bond St., New York, N. Y.
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Union Wadding Co., Pawtucket, R. I.) (See page 187.)
 Phillips, C. F., Little Bldg., Lincoln, Neb.
 Red-Roll—See Union Wadding Co.
 Riverside Mills, Kollock & Tatnall Sts., Augusta, Ga.

Everything is listed under the NOUN or principal word



CATARACT WASHER

Washes an Auto clean in a few minutes

- Does not scratch the finest varnish.

JOBBERS: Public Garages are buying Cataract Washers in large numbers—Car Owners are realizing that this is just the Washer they have been looking for. It will outlast 5 sponges and is Quick, Convenient and Durable. Why not lay in some Quick Sellers? Our terms to the trade are liberal and we will pay freight on all orders of one-half gross or more. Prompt shipments assured. The Cataract Washer is made entirely of nicked brass and cannot rust. The nozzle portion is wound with a soft mop secured with soft copper wire. It positively will not scratch the finest polished surface. Quickly attaches to ordinary garden hose and saves time, trouble and labor.

No. 1 Cataract Stop Cock Handle with Mop retails at \$4. (The Water can be turned On or Off Right in the Handle.) No. 2 Cataract Plain Handle with Mop—\$3.00. Extra Cataract Mop, each, \$1.25. Write us today.

MANUFACTURED ONLY BY

CATARACT AUTO WASHER CO., 1269 Western Ave., Topeka, Kansas

Reliance Lock Washers



"Type B"



"Type D"



"Type C"

Most complete line of types and sizes on the market. Highest quality, prompt shipments and absolutely guaranteed.

THE RELIANCE MANUFACTURING COMPANY

New York
Philadelphia
Atlanta

Cleveland
Detroit

BRANCHES
MASSILLON, OHIO
Chicago

Kansas City
St. Louis
San Francisco

THE POSITIVE LOCK WASHER

Twenty-eight years in service have proven their superiority over every nut lock manufactured. Write for samples and prices.

AUTOMOBILE HEAVY (A. H.)			AUTOMOBILE LIGHT (A. L.)		
Size Bolt	W	T	Size Bolt	W	T
1-10"	1-10"	1-10"	1-10"	1-10"	1-10"
1-4"	1-4"	1-4"	1-4"	1-4"	1-4"
1-2"	1-2"	1-2"	1-2"	1-2"	1-2"
1-16"	1-16"	1-16"	1-16"	1-16"	1-16"
1-8"	1-8"	1-8"	1-8"	1-8"	1-8"
1-32"	1-32"	1-32"	1-32"	1-32"	1-32"
1-64"	1-64"	1-64"	1-64"	1-64"	1-64"
1-128"	1-128"	1-128"	1-128"	1-128"	1-128"
1-256"	1-256"	1-256"	1-256"	1-256"	1-256"
1-512"	1-512"	1-512"	1-512"	1-512"	1-512"
1-1024"	1-1024"	1-1024"	1-1024"	1-1024"	1-1024"
1-2048"	1-2048"	1-2048"	1-2048"	1-2048"	1-2048"
1-4096"	1-4096"	1-4096"	1-4096"	1-4096"	1-4096"
1-8192"	1-8192"	1-8192"	1-8192"	1-8192"	1-8192"
1-16384"	1-16384"	1-16384"	1-16384"	1-16384"	1-16384"
1-32768"	1-32768"	1-32768"	1-32768"	1-32768"	1-32768"
1-65536"	1-65536"	1-65536"	1-65536"	1-65536"	1-65536"
1-131072"	1-131072"	1-131072"	1-131072"	1-131072"	1-131072"
1-262144"	1-262144"	1-262144"	1-262144"	1-262144"	1-262144"
1-524288"	1-524288"	1-524288"	1-524288"	1-524288"	1-524288"
1-1048576"	1-1048576"	1-1048576"	1-1048576"	1-1048576"	1-1048576"
1-2097152"	1-2097152"	1-2097152"	1-2097152"	1-2097152"	1-2097152"
1-4194304"	1-4194304"	1-4194304"	1-4194304"	1-4194304"	1-4194304"
1-8388608"	1-8388608"	1-8388608"	1-8388608"	1-8388608"	1-8388608"
1-16777216"	1-16777216"	1-16777216"	1-16777216"	1-16777216"	1-16777216"
1-33554432"	1-33554432"	1-33554432"	1-33554432"	1-33554432"	1-33554432"
1-67108864"	1-67108864"	1-67108864"	1-67108864"	1-67108864"	1-67108864"
1-134217728"	1-134217728"	1-134217728"	1-134217728"	1-134217728"	1-134217728"
1-268435456"	1-268435456"	1-268435456"	1-268435456"	1-268435456"	1-268435456"
1-536870912"	1-536870912"	1-536870912"	1-536870912"	1-536870912"	1-536870912"
1-1073741824"	1-1073741824"	1-1073741824"	1-1073741824"	1-1073741824"	1-1073741824"
1-2147483648"	1-2147483648"	1-2147483648"	1-2147483648"	1-2147483648"	1-2147483648"
1-4294967296"	1-4294967296"	1-4294967296"	1-4294967296"	1-4294967296"	1-4294967296"
1-8589934592"	1-8589934592"	1-8589934592"	1-8589934592"	1-8589934592"	1-8589934592"
1-17179869184"	1-17179869184"	1-17179869184"	1-17179869184"	1-17179869184"	1-17179869184"
1-34359738368"	1-34359738368"	1-34359738368"	1-34359738368"	1-34359738368"	1-34359738368"
1-68719476736"	1-68719476736"	1-68719476736"	1-68719476736"	1-68719476736"	1-68719476736"
1-137438953472"	1-137438953472"	1-137438953472"	1-137438953472"	1-137438953472"	1-137438953472"
1-274877906944"	1-274877906944"	1-274877906944"	1-274877906944"	1-274877906944"	1-274877906944"
1-549755813888"	1-549755813888"	1-549755813888"	1-549755813888"	1-549755813888"	1-549755813888"
1-1099511627776"	1-1099511627776"	1-1099511627776"	1-1099511627776"	1-1099511627776"	1-1099511627776"
1-2199023255552"	1-2199023255552"	1-2199023255552"	1-2199023255552"	1-2199023255552"	1-2199023255552"
1-4398046511104"	1-4398046511104"	1-4398046511104"	1-4398046511104"	1-4398046511104"	1-4398046511104"
1-8796093022208"	1-8796093022208"	1-8796093022208"	1-8796093022208"	1-8796093022208"	1-8796093022208"
1-17592186444416"	1-17592186444416"	1-17592186444416"	1-17592186444416"	1-17592186444416"	1-17592186444416"
1-35184372888832"	1-35184372888832"	1-35184372888832"	1-35184372888832"	1-35184372888832"	1-35184372888832"
1-70368745777664"	1-70368745777664"	1-70368745777664"	1-70368745777664"	1-70368745777664"	1-70368745777664"
1-14073749155328"	1-14073749155328"	1-14073749155328"	1-14073749155328"	1-14073749155328"	1-14073749155328"
1-28147498310656"	1-28147498310656"	1-28147498310656"	1-28147498310656"	1-28147498310656"	1-28147498310656"
1-56294996621312"	1-56294996621312"	1-56294996621312"	1-56294996621312"	1-56294996621312"	1-56294996621312"
1-112589993226624"	1-112589993226624"	1-112589993226624"	1-112589993226624"	1-112589993226624"	1-112589993226624"
1-225179986453248"	1-225179986453248"	1-225179986453248"	1-225179986453248"	1-225179986453248"	1-225179986453248"
1-450359972906496"	1-450359972906496"	1-450359972906496"	1-450359972906496"	1-450359972906496"	1-450359972906496"
1-900719945812992"	1-900719945812992"	1-900719945812992"	1-900719945812992"	1-900719945812992"	1-900719945812992"
1-1801439891625984"	1-1801439891625984"	1-1801439891625984"	1-1801439891625984"	1-1801439891625984"	1-1801439891625984"
1-3602879783251968"	1-3602879783251968"	1-3602879783251968"	1-3602879783251968"	1-3602879783251968"	1-3602879783251968"
1-7205759566503936"	1-7205759566503936"	1-7205759566503936"	1-7205759566503936"	1-7205759566503936"	1-7205759566503936"
1-14411519133007872"	1-14411519133007872"	1-14411519133007872"	1-14411519133007872"	1-14411519133007872"	1-14411519133007872"
1-28823038266015744"	1-28823038266015744"	1-28823038266015744"	1-28823038266015744"	1-28823038266015744"	1-28823038266015744"
1-57646076532031488"	1-57646076532031488"	1-57646076532031488"	1-57646076532031488"	1-57646076532031488"	1-57646076532031488"
1-115292153064062976"	1-115292153064062976"	1-115292153064062976"	1-115292153064062976"	1-115292153064062976"	1-115292153064062976"
1-230584306128125952"	1-230584306128125952"	1-230584306128125952"	1-230584306128125952"	1-230584306128125952"	1-230584306128125952"
1-461168612256251904"	1-461168612256251904"	1-461168612256251904"	1-461168612256251904"	1-461168612256251904"	1-461168612256251904"
1-922337224512503808"	1-922337224512503808"	1-922337224512503808"	1-922337224512503808"	1-922337224512503808"	1-922337224512503808"
1-1844674449025007616"	1-1844674449025007616"	1-1844674449025007616"	1-1844674449025007616"	1-1844674449025007616"	1-1844674449025007616"
1-3689348898050015232"	1-3689348898050015232"	1-3689348898050015232"	1-3689348898050015232"	1-3689348898050015232"	1-3689348898050015232"
1-7378697796100030464"	1-7378697796100030464"	1-7378697796100030464"	1-7378697796100030464"	1-7378697796100030464"	1-7378697796100030464"
1-14757395592200060928"	1-14757395592200060928"	1-14757395592200060928"	1-14757395592200060928"	1-14757395592200060928"	1-14757395592200060928"
1-29514791184400121856"	1-29514791184400121856"	1-29514791184400121856"	1-29514791184400121856"	1-29514791184400121856"	1-29514791184400121856"
1-59029582368800243712"	1-59029582368800243712"	1-59029582368800243712"	1-59029582368800243712"	1-59029582368800243712"	1-59029582368800243712"
1-118059164737600487424"	1-118059164737600487424"	1-118059164737600487424"	1-118059164737600487424"	1-118059164737600487424"	1-118059164737600487424"
1-236118329475200974848"	1-236118329475200974848"	1-236118329475200974848"	1-236118329475200974848"	1-236118329475200974848"	1-236118329475200974848"
1-472236658950401949696"	1-472236658950401949696"	1-472236658950401949696"	1-472236658950401949696"	1-472236658950401949696"	1-472236658950401949696"
1-944473317900803899392"	1-944473317900803899392"	1-944473317900803899392"	1-944473317900803899392"	1-944473317900803899392"	1-944473317900803899392"
1-1888946635801607798784"	1-1888946635801607798784"	1-1888946635801607798784"	1-1888946635801607798784"	1-1888946635801607798784"	1-1888946635801607798784"
1-3777893271603215597568"	1-3777893271603215597568"	1-3777893271603215597568"	1-3777893271603215597568"	1-3777893271603215597568"	1-3777893271603215597568"
1-7555786543206431195136"	1-7555786543206431195136"	1-7555786543206431195136"	1-7555786543206431195136"	1-7555786543206431195136"	1-7555786543206431195136"
1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"
1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"
1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"
1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"
1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"
1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"
1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"
1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"
1-3868562710121692771909632"	1-3868562710121692771909632"	1-3868562710121692771909632"	1-3868562710121692771909632"	1-3868562710121692771909632"	1-3868562710121692771909632"
1-7737125420243385543819264"	1-7737125420243385543819264"	1-7737125420243385543819264"	1-7737125420243385543819264"	1-7737125420243385543819264"	1-7737125420243385543819264"
1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"	1-15111573086412862390272"
1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"	1-30223146172825724780544"
1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"	1-60446292345651449561088"
1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"	1-120892584691302899122176"
1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"	1-241785169382605798244352"
1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"	1-483570338765211596488704"
1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"	1-967140677530423192977408"
1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"	1-1934281355060846385954816"

WASTE, Cotton (Continued)

Royal Mfg. Co., Rahway, N. J. "Autopak."
(See page 1047.)

Snow Drift—See Sweetland Waste Co.

South Atlantic Waste Co., Charlotte, N. C.

Springfield Waste Co., Mill St., Springfield, Mass.

Standard Waste Co., 3067 E. 61st St., Cleveland, O.

Standard Waste & Rag Co., 234 W. 27th St., New York, N. Y.

Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.

Sweetland Waste Co., 134 Tudor St. (S. Boston), Boston, Mass. "Snow Drift."

Tepee Waste Co., 19 Carteret St., Newark, N. J. "Kanned Kotton."

Travers Twine & Cordage Co., 81 Warren St., New York, N. Y.

Union Wadding Co., Pawtucket, R. I. "Red-Roll." (See page 1045.)

Wisconsin Textile By Products Co., Sibley Ct. & Calumet Ave., Sheboygan, Wis. "Wistex."

Wistex—See Wisconsin Textile By Products Co.

Wood Co., W. A., 373 Atlantic Ave., Boston, Mass.

WATCH HOLDERS—See Holders, Watch

WATCHES, Aviators' Wrist

Depollier & Son, Jacques, 15 Maiden Lane New York, N. Y.

Ingersoll & Bro., Robt. H., 30 Irving Pl., New York, N. Y.

Thomas Clock Co., Seth, 19 W. 44th St., New York, N. Y.

Waltham Watch Co., Waltham, Mass.

Wittnauer Co., A., 30 W. 36th St., New York, N. Y.

WATCHES, Limousine

(*See also Cases, Toilet and Card*)

Majestic—See Wittnauer Co.

Waltham Watch Co., Waltham, Mass.

Wittnauer Co., A., 30 W. 36th St., New York, N. Y. "Majestic."

WATCHMAN'S CLOCKS—See Clocks, Time Recording and Watchman's

WATER ALARMS—See Columns, Water

WATER CARRYING BAGS—See Bags, Water Carrying

WATER CIRCULATING PUMPS—See Pumps, Water Circulating

WATER CIRCULATING PUMPS, AIRCRAFT—See Pumps, Aircraft Water Circulating

WATER CIRCULATING PUMPS, MOTOR BOAT—See Pumps, Motor Boat Water Circulating

WATER CIRCULATING PUMPS, TRACTOR—See Pumps, Tractor Water Circulating

WATER CIRCULATING REGULATORS—See Regulators, Water Circulating

WATER CIRCULATION GAGES—See Gages, Water Circulation

WATER CIRCULATION REGULATING VALVES—See Valves, Water Circulation Regulating

WATER COLUMN MIRRORS—See Mirrors, Water Gage

WATER COLUMNS—See Columns, Water

WATER CONNECTIONS—See Connections, Brass Water

WATER COOLERS—See Radiators, Water Cooling

WATER, Distilled

(*For use in Storage Batteries*)

Hygeia Distilled Water Co., New York, N. Y.
Northwestern Distilled Water Co., 510-16 DuPont Ave. N., Minneapolis, Minn.

WATER LEVEL REGULATORS—See Regulators, Water Level

WATER LINE GAGES—See Gages, Boiler Water

WATER PUMPS—See Pumps, Water

WATER REGULATING VALVES—See Valves, Water Circulation Regulating.

WATER STILLs—See Stills, Water

WATERPROOF CEMENT, AIRPLANE—See Cement, Airplane Waterproof

WAYS, Balancing

(*For Balancing Machine—See Machine, Balancing*)

Defiance Machine Works, 434 Perry St., Defiance, O.

Rockford Tool Co., 2410 Harrison Ave., Rockford, Ill.

WEARING APPAREL—See Clothing; also Gloves; also Leggings; also Mufflers

WEATHER STRIPS—See Strips, Wind Shield Weather

WEB STRAPS—See Straps, Web

WEBBING, COACH—See Lace, Coach

WEBBING COTTON—See Webbing, Jute and Cotton

Everything is listed under the NOUN or principal word

ROYAL Autopak WASTE

**Standard for Quality
in the Handy 1-lb. Bale
for Automotive Use**

Made from choice selected materials. Refined and expertly mixed for maximum cleanness, absorbency and economy. Packed in the tidy pound bale for portability and convenience.

Dealers: Profit by the greatest advertising campaign ever launched on cotton waste.
Ask your jobber or us.



ROYAL MANUFACTURING CO
RAHWAY, N. J., U. S. A.

PROGRESSIVE

**ELECTRIC VULCANIZERS
and TIRE REPAIR SHOP
EQUIPMENT.**

Electric Vulcanizers
Electric Tube Plates
Tire Jacks and Lasts
Tire Plate
Tire Skivers
Tire Inspector
Tube Deflators
Tire Cutter
Buffing Machines
Casing Tools
Tire Hooks
Tire Blocks

Write for descriptive folder

THE P. S. M. CO.

3116-36 Snelling Ave. S.
Minneapolis, Minn.

"Better Equipment for Tire Repairers"

A Friend in Need

**Easier Than Sticking on a
Temporary Cold Patch—**

Quicker Than Changing Tubes

The SHALER 5-Minute Vulcanizer makes permanent, heat vulcanized repairs that will not come off—stronger than the tube itself. No cement—no gasoline—no flame. More than a million motorists carry this convenient "Friend in Need" in their cars to protect themselves against the annoyance and delays of puncture troubles. Get it—for your car.

**Complete
Outfit \$1.50**

AT ALL AUTO SUPPLY STORES

The outfit includes the vulcanizer, 6 round Patch-&-Heat Units for punctures and 6 oblong for cuts and tears—price, complete, only \$1.50. (Slightly higher West of the Rockies and in Canada.)

C. A. SHALER COMPANY
907 Fourth St., Waupun, Wis.



Please mention The Automobile Trade Directory

WEBBING, Jute and Cotton

American Mills Co. of N. Y. 438 Broadway, New York, N. Y.
 Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 1049.)
 Goss Co., J. C., 36 Woodbridge St. E., Detroit, Mich.
 Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.
 Hope Webbing Co., 1005 Main St., Pawtucket, R. I.
 Landers Bros. Co., Dept. A 2, Toledo, O. (See page 1049.)
 Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 1049.)
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Susquehanna Webbing Co., Fifth St., Bloomsburg, Pa.

WEDGE PLATES—See Plates, Demountable Rim Wedge

WELDERS' CLAMPS—See Clamps, Oxy-acetylene Welders

WELDERS' GOGGLES—See Goggles, Mechanics' and Welders'

WELDING, Autogenous

Admiral Welding Machine Co., 1607 Locust St., Kansas City, Mo.
 Advance Welding Machine Co., 111 N. Desplaines St., Chicago, Ill.
 Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 American Welding Co., 2301 Olive St., St. Louis, Mo.
 American Welding Co., 3011 S. Wabash Ave., Chicago, Ill.
 Atlantic Welding Works, 30th & Callowhill Sts., Philadelphia, Pa.
 Atlas Welding Works, 249-51 Union St., Elizabeth, N. J.
 Atlas Welding & Supply Co., 2930 Penn Ave., Pittsburgh, Pa.
 Birmingham Welding Co., 2200 First Ave., S., Birmingham, Ala.
 Bizier Welding & Cutting Co., 196 11th Ave., New York, N. Y.
 Blanchette Welding Co., 149-51 S. Broadway, Denver, Colo.
 Hlekman, S., New York, N. Y. (See page 761.)
 Bossert Corp., Utica, N. Y. (See page 887.)
 Bournonville Welding Co., Eng., 341-45 W. 64th St., New York, N. Y.
 Brasing & Welding Co., 1615 Wabash Ave., Chicago, Ill.
 Brooklyn Welding Co., 184-86 Adams St., Brooklyn, N. Y.
 Buckeye Welding & Repair Shop, 132 Water St., Lima, O.
 Busch-Hartman Co., 716 Golden Gate Ave., San Francisco, Cal.
 Cambridge Welding Works, 51 Ames St., Cambridge, Mass.
 Capitol Welding Co., 45-47 Sabin St., Providence, R. I.
 Cave Welding & Mfg. Co., 32 Liberty St., Springfield, Mass. "Rgo."
 Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.
 Columbus Welding Shop, 783 N. Fourth St., Columbus, O.
 Crosby Co., Buffalo, N. Y. (See page 893.)
 Davis & Schegg Co., 302 Amsterdam Ave., New York, N. Y.
 Day Welding Co., 43 Summer Ct., N. W., Washington, D. C.
 Dayton Welding Co., 13 S. St. Clair St., Dayton, O.
 Delcampe Welding Co., 1517 Wood Ave., Bridgeport, Conn.
 Des Moines Welding Co., 117-19 Grand Ave., Des Moines, Ia.
 Detroit Welding Specialty Co., 620 Beaubien St., Detroit, Mich.
 Dyer Co., G. H., 155 Brookline St., Cambridge, Mass.
 General Welding Co., 355-57 14th St., Hoboken, N. J.
 Gibbs Welding Co., 12th & Locust Sts., Des Moines, Ia.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 Great Lakes Welding Co., 937-45 West St., Cleveland, O.
 Harlem Machine Co., 542 W. 127th St., New York, N. Y.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Havens Bros. Mfg. & Supply Co., 1622 Wasee St., Denver, Colo.
 Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.
 Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.
 Hoag Welding Co., 81 E. Court St., Springfield, Mass.
 Hobbie Welding Plant, Maple and Fourth Sts., Hampton, Ia.
 Horgan Co., Paul, 1055-57 Atlantic Ave., Brooklyn, N. Y.
 Hub Machine, Welding & Contracting Co., 32d & Race Sts., Philadelphia, Pa.
 Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.
 Ireland & Matthews Mfg. Co., Beard & Chatfield St., Detroit, Mich.
 K. G. Welding & Cutting Co., 556 W. 34th St., New York, N. Y.
 Kelso Welding Co., E. H., 1030 Francis St., St. Joseph, Mo.
 Keuka Industries, Inc., Hammondsport, N. Y.
 Kimballs, Inc., 137 Ashmun St., New Haven, Conn.
 Klinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
 Laclede Iron Works, 1215 Chestnut St., St. Louis, Mo.
 Lawrence & Co., L., 292 Halsey St., Newark, N. J.
 Lionel Corp., 605-21 S. 31st St., Irvington, N. J.
 McCrea & Jones, 30 Catherine St., Utica, N. Y.
 Manufacturers Welding Co., 154 Berriman St., Brooklyn, N. Y.
 Master Welding & Cutting Corp., 1249 Holden Ave., Detroit, Mich.
 Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.
 Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metals Welding Co., 4400 Perkins Ave., Cleveland, O.
 Michaels & Mourre, 344 Amsterdam Ave., New York, N. Y.
 Milwaukee Cylinder Grinding Co., Wiel & Concordia Aves., Milwaukee, Wis.
 National Rubber & Specialties Co., 4439-39 Chickering Ave., Cincinnati, O.

Everything is listed under the NOUN or principal word

Buffalo Weaving and Belting Co.

Buffalo, N. Y.

Spinners and Weavers

All Qualities Stay and Strainer

Web, Tire and Rebound Straps

Anti-Squeak Web

Ford Brake Lining

Floor Space:

250,000 Square Feet

12,000 Spindles

300 Looms

Ludlow Manufacturing Associates

Our Unequalled Facilities Insure
Quality . Service . Economy

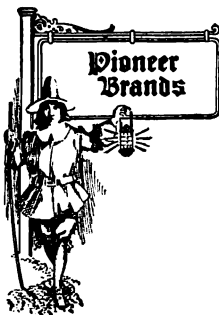
JUTE WEBBING for AUTO TOPS

STANDARD
BURLAP

All Widths and Weights

*Your inquiries will receive prompt
attention.*

111 Devonshire Street
Boston 3 Mass.



Enameled and Rubber Muslins, Drills and Ducks

Gimp

Watertite

Buckram

Burlap

Sheeting

Transparent Celluloid

Wadding

Bow Lining

Flaxene

Strain Straps

Dust Covers

Welt

Webbing

Oiled Duck

Fiber Cord

Artificial Leather

Mohair

Tie Straps

Roofing Duck

Moss

Casket Lowering
Straps

Anti-Squeak

Whipcord

Cambric

THE LANDERS BROS. COMPANY

DEPARTMENT A2

TOLEDO, OHIO

Please mention The Automobile Trade Directory

WELDING, Autogenous (Continued)

National Welding Co., 326-38 Dixwell Ave., New Haven, Conn.
 National Welding Co., 80 Dickerson St., Newark, N. J.
 National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
 Oregon Welding Machine Co., 305 Gilson St., Portland, Ore.
 Oxy-Acetylene Welding Co., 1921 Grand Ave., Kansas City, Mo.
 Oxy-Carbi Co., New Haven, Conn.
 Pacific Coast Welding Co., 610 E. Pike St., Seattle, Wash.
 Peerless Welding Co., 25 Stanhope St., Boston, Mass.
 Peerless Welding Co., 505 W. 45th St., New York, N. Y.
 Pioneer Welding Co., 610 E. Main St., Kalama-zoo, Mich.
 Pittsburgh Reinforced Bracing & Machine Co., 3525 Liberty Ave., Pittsburgh, Pa.
 Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.
 Portland Brazing & Machine Works, 266 Gilson St., Portland, Ore.
 Powell Welding Co., 143 Rogers Ave., Brooklyn, N. Y.
 Rego—See Cave Welding & Mfg. Co.
 S. & M. Welding Co., 1831-33 E. 55th St., Cleveland, O.
 Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 635.)
 Schemmel Welding Machine Works, Wapakoneta, O.
 Scored Cylinder Works, 433 Golden Gate Ave., San Francisco, Cal.
 Smith-Hamburg-Scott Welding Co., 505 W. 57th St., New York, N. Y.
 Smith & Co., W. R., 304-06 W. 52d St., New York, N. Y.
 Sorenson, C., 18 E. 16th St., Chicago, Ill.
 Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.
 Standard Welding & Machine Co., 416 E. Second St., Des Moines, Ia.
 Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
 Superior Welding Co., 331 Knoxville Ave., Peoria, Ill.
 Superior Welding & Machine Co., 52 Canal St., Stamford, Conn.
 Transcres Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 939.)
 Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 811.)
 Twin City Welding Co., 313 Seventh Ave., S., Minneapolis, Minn.
 Vilter Mfg. Co., 879 Clinton St., Milwaukee, Wis.
 Vulcan Brazing & Machine Co., 2126-28-30 Race St., Philadelphia, Pa. (See page 739.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 331.)
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.
 Weldrite Co., 100-04 Hunter Ave., Long Island City, N. Y.
 Western Drop Forge Co., Marion, Ind.
 Wilkes-Barre Welding Co., 6 W. Ross St., Wilkes-Barre, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 901.)

WELDING COMPOUNDS—See Compounds, Welding

WELDING, Electric

Beckley Perforating Co., North Ave., Garwood, N. J.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
 Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.
 Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 289.)
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)
 McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.
 Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metzger Welding Co., 1625 Blue Rock St., Cincinnati, O.
 Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.
 Pioneer—See Thomas Electric Welding Co.
 Standard Parts Co., Cleveland, O. (See page 253.)
 Steel Products Co. (Michigan Plant), 7731 Conant Ave., Detroit, Mich.
 Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass. "Pioneer."
 Turner Novelty Co., John C., Dayton, O.
 Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. (See page 1073.)

WELDING FLUX—See Compounds, Welding

WELDING MACHINES—See Machines, Electric Welding; also Machines, Autogenous Welding

WELDING RODS—See Rods, Welding

WELDING TORCHES—See Torches, Acetylene Brazing and Welding; also Machines, Autogenous Welding

WELTS, UPHOLSTERY—See Bindings, Upholstery

WET TOOL GRINDERS—See Grinders, Wet Tool

WHEEL ALIGNING GAGES—See Gages, Wheel Aligning

WHEEL ATTACHMENTS for FORDS—See Attachments, Tilting Wheel

WHEEL BEARINGS for FORDS—See Bearings, Front Wheel

WHEEL BRUSHES—See Washers, Vehicle

WHEEL CARRIERS for FORDS—See Holders or Carriers, Spare Wheel

WHEEL CLOCKS for FORDS—See Clocks, Steering Wheel

Everything is listed under the NOUN or principal word

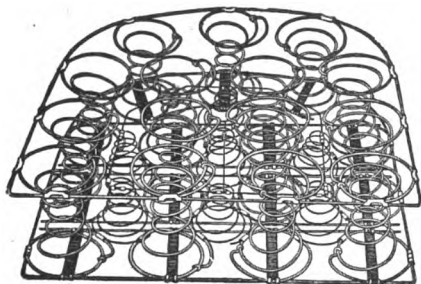


WASHERS

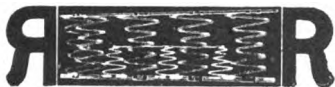


For the Automobile Industry are our specialty.
Send us your inquiries.

MASSACHUSETTS MACHINE SHOP, Inc.
817 Albany Street, Boston, Mass.



ROUGH RIDER SPRINGS (Patented)



Best Automobile Spring Ever Made
No Possible Bumps or Jars See these Auxiliary Springs?

The Best Cushions are Made with
ROUGH RIDER SPRINGS
NOTHING SO COMFORTABLE

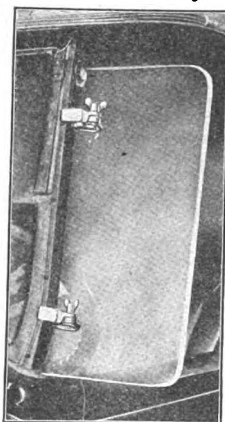
No Shocks or Jars when Rough Riders are used

Manufactured by

REYNOLDS SPRING CO., Jackson, Mich.

RANDOLPH EDWARDS CO. Exclusive Selling Agent

Mitchell Auxiliary Windshields



**Fit Every
Car**

**No Holes in
Glass**

**Nothing
Interferes
with
Vision**

**Fittings
Are Made of
Nickel
Bronze**

**Attached in
Ten Minutes**

**Sold complete
with Glass,
or Fittings
Sold
Separately**

ATTRACTIVE SALES PROPOSITION

Write Us Today

Mitchell Automotive Company
INC.

157 Christopher Street New York

STAMPED METAL PARTS

For the

**Automotive
Industries**

Send us your blueprints

Worcester Stamped Metal Company

Established 1883
Worcester, Massachusetts



• QUALITY •
STAMPINGS

Please mention The Automobile Trade Directory

WHEEL DISCS for FORDS—See Discs, Wheel

WHEEL DRESSERS—See Dressers, Emery Wheel

WHEEL GAGES—See Gages, Wheel Aligning

WHEEL GRIPS—See Grips, Tractor Wheels

WHEEL HOLDERS—See Holders or Carriers, Spare Wheel

WHEEL HUBS—See Hubs, Wheel

WHEEL PULLERS—See Pullers

WHEEL REMOVING CRANES—See Cranes, Drags and Jacks, Truck Wheel Removing

WHEEL REMOVING DRAGS—See Cranes, Drags and Jacks, Truck Wheel Removing

WHEEL RIMS—See Rims, Wheel

WHEEL TIGHTENING COMPOUNDS—See Compounds—Wood Wheel Tightening

WHEEL TRUCKS—See Castors and Wheel Trucks

WHEEL TRUEING TOOLS—See Dressers, Emery Wheel

WHEELS, Airplane Pressed Steel

Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 1053.)

Disteel—See Detroit Pressed Steel Co.

Reliance Wheel Co., Federal Bldg., Youngstown, O.

WHEELS, Airplane Spring

Atlas Wheel Co., Rockefeller Bldg., Cleveland, O.

WHEELS, Airplane Wire

Booth—See Detroit Wire Wheel Corp.

Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich. "Booth."

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "Palmer" and "J. N." Wheels.) (See page 115.)

J. N.—See Wire Wheel Corp. of America.

Maryland Metal Products, Hagerstown, Md. "Pasco."

Palmer—See Wire Wheel Corp. of America.

Pasco—See Maryland Pressed Steel Co.

Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "Palmer," "J. N." (See page 507.)

WHEELS, CARBORUNDUM—See Wheels, Grinding

WHEELS, Cast Steel

American Steel Foundries, McCormick Bldg., Chicago, Ill.

Clark Equipment Co., Buchanan, Mich.

Dayton Steel Foundry Co., Chapel Rd. & C. H. & D. R. R., Dayton, O.

Hart-Parr Co., Lawler St., Charles City, Iowa.

Michigan Steel Casting Co., 1986 Guolin St., Detroit, Mich.

Singer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.

Smith Wheel, Inc., Syracuse, N. Y. (See page 1057.)

Standard Steel Castings Co., Hickox Bldg., Cleveland, O.

West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.

WHEELS, DEMOUNTABLE—See Wheels, Metal Disc; also Wheels, Wood Disc; also Wheels, Demountable Wire

WHEELS, DEMOUNTABLE, for Fords—See Wheels, Metal Disc; also Wheels, Wood Disc; also Wheels, Demountable Wire. For Demountable Hubs—See Hubs, Demountable

WHEELS, Demountable Wire

(For other types of Demountable Wheels—See Wheels; Metal Disc; also Wheels, Wood Disc. For Non-Demountable Wire Wheels—See Wheels, Non-Demountable Wire)

Dayton Wire Wheel Co., 825 Miami Chapel Road, Dayton, Ohio.

De Luxe—See Simplex Wire Wheel Co.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "Honk" and "House" Wire Wheels.) (See page 115.)

Hayes Wheel Co., Horton St., Jackson, Mich.

Houk—See Wire Wheel Corp. of America.

House—See Wire Wheel Corp. of America.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Rudge-Whitworth."

Maryland Metal Products Co., Hagerstown, Md. "Pasco."

Pasco—See Maryland Metal Products Co.

Phelps Mfg. Co., Columbus, Ohio.

Rudge-Whitworth—See Marlin-Rockwell Corp.

Simplex Wire Wheel Co., Cadillac, Mich. "De Luxe." (See page 1050.)

Stewart Wire Wheel Co., 601-37 W. Barner St., Frankfort, Ind.

Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "House," "Honk." (See page 507.)

WHEELS, Demountable Wire for Fords

(For other types of Demountable Wheels—See Wheels, Metal Disc; also Wheels, Wood Disc. For Non-Demountable Wire Wheels—See Wheels, Non-Demountable Wire)

Budd Wheel Corp., 22d St. & Lehigh Ave., Philadelphia, Pa.

Dayton Wire Wheel Co., 825 Miami Chapel Road, Dayton, Ohio.

De Luxe—See Simplex Wire Wheel Co.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for "House" Wire Wheels.) (See page 115.)

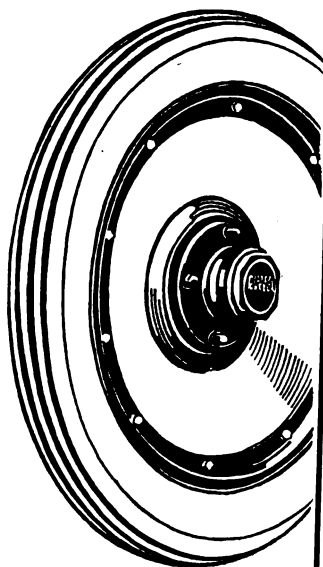
Everything is listed under the NOUN or principal word

DISTEEL WHEELS

*The Wheels that Complete
the Car*

When you see a car with wheels that don't wobble, you know they're Disteel Wheels. By holding the tires firm and true Disteel Wheels save tires and gasoline and prolong the life of your car.

The inwardly Curved Wheel is the Disteel Wheel.



DISTEEL WHEEL CORPORATION

DETROIT, U. S. A.

Disteel wheels are manufactured exclusively by the Detroit Pressed Steel Company at their new plant, Cabot Avenue, Detroit.

The Mount Elliott plant is devoted entirely to the making of pressed steel frames for the automotive industry. Correspondence is invited from quantity manufacturers of passenger cars, trucks, tractors and trailers.

*Send Your Blue Prints to Us or Let
Us Send a Representative to You*

DETROIT PRESSED STEEL COMPANY

DETROIT, U. S. A.

WHEELS, Demountable Wire for Fords (Continued)

House—See Wire Wheel Corp. of America.
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Rudge-Whitworth."
 Maryland Metal Products Co., Hagerstown, Md. "Pasco."
 Pasco—See Maryland Metal Products Co.
 Phelps Mfg. Co., Columbus, Ohio.
 Rudge-Whitworth—See Marlin-Rockwell Corp.
 Simplex Wire Wheel Co., Cadillac, Mich. "De Luxe." (See page 1059.)
 Stewart Wire Wheel Co., 601-37 W. Barner St., Frankfort, Ind.
 Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "House." (See page 507.)

WHEELS, DISC—See Wheels, Metal Disc; also Wheels, Wood Disc

WHEELS, EMERGENCY—See Wheels, Special

WHEELS, EMERY—See Wheels, Grinding

WHEELS, Fifth

(For applying to the rear axle of the car so the trailer can be mounted)

Borst Coupler Control Mfg. Co., Buffalo, N. Y.
 Martin Rocking Fifth Wheel Co., P. O. Box 1244P., Springfield, Mass. (See page 1055.)
 Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
 Wolverine Truck-Trailer Co., 8931 Greeley St., Detroit, Mich.

WHEELS, Grinding

Abrasive Co. (Bridgesburg), Philadelphia, Pa.
 Alundum—See Norton Co.
 American Emery Wheel Works, Waterman, East River & Pitman Sts., Providence, R. I.
 Bay State Emery Wheel Co., Worcester, Mass.
 Bridgeport Safety Emery Wheel Co., 82 Knowlton St., Bridgeport, Conn.
 Buffalo Emery Wheel Co., 127 Ash St., Buffalo, N. Y.
 Carborundum Co., Buffalo & 18th Sts., Niagara Falls, N. Y.
 Chicago Wheel & Mfg. Co., 1101-03 W. Monroe St., Chicago, Ill.
 Cortland Grinding Wheel Co., Cortland, N. Y.
 Crystolon—See Norton Co.
 Detroit Grinding Wheel Co., Field & Jefferson Sts., Detroit, Mich. "Hart."
 Electric Emery Wheel Co., 827 Broad St., Newark, N. J.
 Hart—See Detroit Grinding Wheel Co.
 National Grinding Wheel Co., 2984 Main St., Buffalo, N. Y.
 Norton Co., 1 New Bond St., Worcester, Mass. "Crystolon," "Alundum."
 Pennsylvania Grinding Wheel Co., Wayne Junction, Philadelphia, Pa.
 Pike Mfg. Co., Pike, N. H.
 Pittsburgh Grinding Wheel Co., Rochester, Pa.
 Safety Emery Wheel Co., Springfield, O.
 Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Star Corundum Wheel Co., 241-51 Cavalry Ave., Detroit, Mich.
 Sterling Grinding Wheel Co., Tiffin, O. (See page 1057.)
 Superior Corundum Wheel Co., 103 Felton St., Waltham, Mass.
 Vitrified Wheel Co., Westfield, Mass.
 Waltham Emery Wheel Co., 115 Bacon St., Waltham, Mass.
 Waltham Grinding Wheel Co., Waltham, Mass.

WHEELS, HEATED STEERING—See Warmers, Hand

WHEELS, LOCKING STEERING—See Locks, Automobile

WHEELS, LOCKING STEERING for FORDS—See Locks, Steering Gear

WHEELS, Metal Disc

(For Wood Disc Wheels—See Wheels, Wood Disc. For other Demountable Wheels—See also Wheels, Demountable Wire.)

American Steel Foundries, Chicago, Ill. "Cushnsteel."
 Budd Wheel Corp., 22d St. & Lehigh Ave., Philadelphia, Pa. "Michelin."
 Chicago Steel Wheel Co., 2118 S. Michigan Ave., Chicago, Ill.
 Cushnsteel—See American Steel Foundries.
 Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 1053.)
 Disteel—See Detroit Pressed Steel Co.
 Forsyth Bros. Co., Harvey, Ill. (See page 1055.)
 Hall Syndicate, Inc., 1310 Commonwealth Bldg., Philadelphia, Pa. (See page 905.)
 Harvey Rim & Wheel Co., 25 Jewett Ave., Buffalo, N. Y.
 Indestructible Wheel Co., Lebanon, Ind.
 Lack Mfg. Co., 1200 S. Third St., Paducah, Ky.
 Michelin—See Budd Wheel Corp.
 Reliance Wheel Co., Federal Bldg., Youngstown, O.
 Robinson & Smithers, 5 Columbus Circle, New York, N. Y.

WHEELS, Metal Disc for Fords

(For Wood Disc Wheels—See Wheels, Wood Disc. For other Demountable Wheels—See also Wheels, Demountable Wire.)

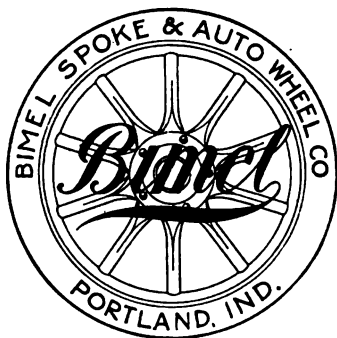
Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 1053.)
 Disteel—See Detroit Pressed Steel Co.
 Globe Machine & Stamping Co., Cleveland, O. (See page 1039.)

WHEELS, Motor

(For converting ordinary bicycles to motor driven bicycles)

Basco—See Briggs & Stratton Co.
 Briggs & Stratton Co., 1047 Louis Ave., Milwaukee, Wis. "Basco."
 Johnson Motor Wheel Co., 908 E. Sample St., South Bend, Ind.
 Rollaway Co., 517-19 Shepard St., Toledo, O.

Everything is listed under the NOUN or principal word



"Indiana Second Growth Whoools"

are made for
the smallest passenger car up
to the largest truck.

BIMEL SPOKE & AUTO WHEEL COMPANY
PORTLAND, IND.

Get the Idea of the Martin Method

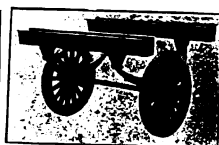


The Martin Semi-Trailer

Note that Fifth Wheel and Rear End Assembly constitute a chassis, 1 to 10-ton capacity.



**Shock-Absorbing Type
Fifth Wheel**



**Martin Rear-End Assembly
Ready to Attach to Trailer Bodies**



Martin Floating-Bearing Trailer Axle

Write for our interesting and fully priced catalog.
MARTIN ROCKING FIFTH WHEEL CO.
P. O. Box 1244-P, Springfield, Mass.

"The Wheel That Stands the Shock"

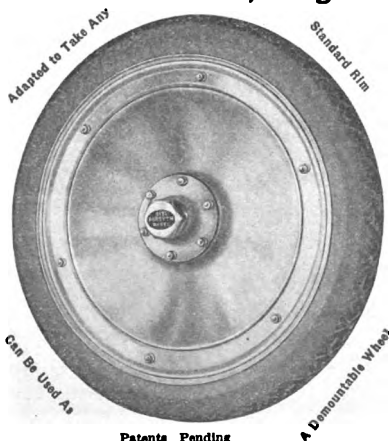
Forsyth Demountable Rim, Single Disc Wheel

Light Weight

The *Forsyth* Wheel is made to take any standard demountable rim which can be quickly applied or removed from the disc of the wheel.

Mass Construction

After years of careful study and development, we discovered several principles in metal wheel construction. Our aim was to avoid using simply a mass of "dead" metal and unnecessary weight.



Patents Pending

Increased Strength

Therefore, only four wheels are required, thus saving weight and expense.

Shock Absorption

We were after a "live" wheel, which would immediately respond to and absorb shocks throughout the structure as a whole, instead of locally at any point. We obtained this result with a low peripheral weight.

Forsyth Brothers Company, Harvey, Ill.

We also make Frames, Brake Drums, and other pressings

Please mention The Automobile Trade Directory

WHEELS, Motor Boat Propeller

American Manganese Bronze Co. (Holmesburg), Philadelphia, Pa.
B & B—See Bryant & Berry Propeller Co.
 Bryant & Berry Propeller Co., 9 W. Larned St., Detroit, Mich. "B. & B."
 Carpenter & Co., Geo. B., 440 N. Wells St., Chicago, Ill.
 Columbian Bronze Corp., 622 Fifth Ave., New York, N. Y.
 Halvorsen—See U. S. Products Corp.
 Harthan—See McFarland Foundry & Machine Co.
 Hyde Windlass Co., 2 Federal St., Bath, Me.
 King Bros., 439 E. Water St., Syracuse, N. Y.
 McFarland Foundry & Machine Co., Willow & Miller Sts., Trenton, N. J. "Harthan."
 Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.
 Stickler Wheelless Wheel Co., Cook St., Portage, Wis.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

WHEELS, Motor Boat Reversing Propeller

Halvorsen—See U. S. Products Corp.
 Gordon Propeller & Mfg. Co., 9001 Desmond Ave., Cleveland, O.
 Marine Wheel Co., 4450 Market Ave., Grand Rapids, Mich.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."

WHEELS, Motor Boat Steering

Edson Mfg. Co., 257 Atlantic Ave., Boston, Mass.
 Sea Bright Dory Works, 491 Atlantic Ave., Long Branch, N. J.

WHEELS, Non-Demountable Wire

(For Demountable Wire Wheels—See *Wheels, Demountable Wire.*)

Booth—See Detroit Wire Wheel Corp.
 Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich. "Booth."
 Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.
 Mott Wheel Works, Jackson, Mich.

WHEELS, Non-Demountable Wire for Fords

(For Demountable Wire Wheels—See *Wheels, Demountable Wire.*)

Detroit Wire Wheel Corp., 7175 Clayton Ave., Detroit, Mich.
 Grant Wire Wheel Mfg. Co., 865 W. North Ave., Chicago, Ill.
 Mott Wheel Works, Jackson, Mich.

WHEELS, PNEUMATIC—See Wheels, Special**WHEELS, PROPELLER—See Wheels, Motor Boat Propeller****WHEELS, Repairing of**

Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill.
 (See pages 794 and 795.)

WHEELS, REVERSING—See Wheels, Motor Boat Reversing**WHEELS, Special Pneumatic, Spring and Emergency**

American Cushion Wheel Co., 7956 S. Chicago Ave., Chicago, Ill.
 Atlas Wheel Co., Rockefeller Bldg., Cleveland, O.
 Autocraft Corp., 126 State St., Boston, Mass. "Monarch."
 Cameron Spring Wheel Co., 622 Brainerd St., Detroit, Mich.
 Constant Auto Wheel Co., 619 Vermont St., Lawrence, Kans. "Modlin."
 Cornfield Wheel Co., 1540 Ann Pl., Detroit, Mich.
 Erickson Tire Corp., 159-61 26th St., Brooklyn, N. Y.
 Gray Bros., 321 S. La Salle St., Chicago, Ill.
 Halsey & Lathrop, 136 State St., Boston, Mass.
 Houston—See Pressed Steel Pneumatic Wheel Co.
 Jaxon Steel Products Co., Jackson, Mich.
 Kuns Wheel Co., 2601 Vliet St., Milwaukee, Wis.
 Mead—See National Gear & Truck Wheel Corp.
 Martin Cushion Wheel Co., 311-13 N. Sangamon St., Chicago, Ill.
 Mead—See National Gear & Truck Wheel Corp.
 Midwest Engine Co., 1900 Martindale Ave., Indianapolis, Ind. "Stopshok."
 Modlin—See Constant Auto Wheel Co.
 Monarch—See Autocraft Corp.
 Morand Cushion Wheel Co., 800-902 S. May St., Chicago, Ill.
 National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead."
 National Wheel Co., Wausau, Wis.
 Peck Wheel Co., 2121 Michigan Ave., Chicago, Ill.
 Pneumatic Disc Wheel Co., 102 N. Eighth St., Richmond, Va.
 Prather Wheel Mfg. Co., 427 Temple Ave., Detroit, Mich.
 Pressed Steel Pneumatic Wheel Co., Farmers Bank Bldg., Pittsburgh, Pa. "Houston."
 Pronovost Wheel Co., 38 E. Elizabeth St., Detroit, Mich.
 Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa. "Sandelbach."
 Resilient Safewheel Co., 1829 Cypress St., Oakland, Cal.
 Schick Wheel & Tire Co., 89 Indiana Ave., Wheeling, W. Va.
 Sandelbach—See Rech-Marbaker Co.
 Sewell Cushion Wheel Co., 5463 Gratiot Ave., Detroit, Mich.
 Sipe—See Automobile Spring Wheel Co.
 Stopshok—See Midwest Engine Co.
 Watson Wheel & Rim Corp., Hippodrome Bldg., Cleveland, O.
 Wendland Pneumatic Wheel Co., Colonial Arcade, Cleveland, O.

WHEELS, SPRING AIRPLANE—See Wheels, Airplane Spring

WHEELS, SPRING—See Wheels, Special Pneumatic, Spring and Emergency

WHEELS, STEEL AIRPLANE—See Wheels, Airplane Pressed Steel

WHEELS, STEEL—See Wheels, Metal Disc; also Wheels, Steel Spoked; also Wheels, Cast Steel; also Wheels, Tractor Steel

Everything is listed under the NOUN or principal word



THE STERLING GRINDING WHEEL CO.

TIFFIN, OHIO, U. S. A.

Selling Agents:
L. BEST CO., 75 BARCLAY ST., NEW YORK,
N. Y.

Chicago Houses:
30-32 N. CLINTON ST., CHICAGO, ILL.

THE ROYER WHEEL CO.

AUTOMOTIVE WOOD WHEELS

TRUCK WHEELS

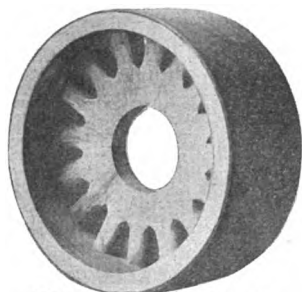
For All Sizes
Giant Pneumatic and Solid Tires

PASSENGER CAR WHEELS

All Types Including
Metal Felloe Wheels

FORD WHEELS

Regular Clincher and Demountable Rim Wheels,
also Demountable Rim and Solid Ford Truck Wheels



THE BEST WHEELS

Send Us Your Specifications

THE ROYER WHEEL CO.

ESTABLISHED 1848

AURORA, INDIANA

SMITH WHEELS, EVERLASTING



YOUR TRUCK will run
easier, last longer and
give far greater mileage
from Tires and Gasoline,
when equipped with SMITH
WHEELS.

Guaranteed FOR LIFE OF TRUCK
on which originally placed.

SMITH WHEEL, Inc., Syracuse, N. Y.



Please mention The Automobile Trade Directory

WHEELS, Steel Spoked

All-Steel Wheel Co., Widener Bldg., Philadelphia, Pa.
 Custer Pressed Steel Wheel Co., 112 Holley Ave., Bradford, Pa.
 Parker Wheel Co., 3778 E. 78th St., Cleveland, Ohio.

WHEELS, STEEL TRACTOR—See **Wheels, Tractor Steel**

WHEELS, Steering

(Including Tilting Steering Wheels; for Rims only—See Rims, Rubber; also Rims, Wood Steering Wheel; For Heated Wheels—See Wheels, Heated Steering)

Allarding Products Co., 209 N. Main St., Mansfield, O.

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich.
 (See page 605.)

American Wood Rim Co., Onaway, Mich.

E-Z—See Gemco Mfg. Co.

F. M. F.—See Sav-a-Life Fender Co.

Fold-O-Lock Steering Wheel Co., 114-16 S. Lawrence Ave., Wichita, Kans.

Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. "E-Z."
 (See pages 172 and 173.)

Hartzell Steering Wheel Co., Piqua, O.

K. & S. Mfg. Co., 2544 S. Western Ave., Chicago, Ill.

More-Room—See Neville Steering Wheel & Mfg. Co.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. "More-Room."

Pouvalsmith Corp., Smith St., Poughkeepsie, N. Y. "Povasco."

Povasco—See Pouvalsmith Corp.

Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.

Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.

Sav-a-Life Fender Co., Guardian Bldg., Cleveland, O. "F. M. F."

Tiltlok Steering Wheel Corp., 500 Howard St., Detroit, Mich.

WHEELS, Steering, for Fords

(Including large and tilting wheels; for Heated Wheels—See Wheels, Heated.)

American Metal Parts Mfg. Co.—See Fulton Co.

Au-To Compressor Co., Wilmington, O. "Ore."
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)

Becco—See Michigan Motor Specialties Co.
 Comfy-Drives—See Main Electric Co.

De Luxe—See Decker Co.

Decker Co., Richard M., 2009 Indiana Ave., Chicago, Ill. "De Luxe."
 (See page 589.)

E-Z—See Gemco Mfg. Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Sole Distributors for American Metal Parts Mfg. Co., Milwaukee, Wis. (See page 1020.)

Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. "E-Z."
 (See pages 172 and 173.)

Hasco—See Howard Auto Specialties Co.
 Howard Auto Specialties Co., Swampscott, Mass. "Hasco."

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

More-Room—See Neville Steering Wheel & Mfg. Co.

Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. "More-Room."

Oro—See Au-To Compressor Co.

Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.

Stout's Mfg. Co., Lockport, N. Y.
 (See page 699.)

Tiltlok Steering Wheel Corp., 500 Howard St., Detroit, Mich.

W-A—See Whetstone & Co.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WHEELS, STEERING, MOTOR BOAT—
 See **Wheels, Motor Boat Steering**

WHEELS, TILTING—See **Wheels, Steering**

WHEELS, Tractor Steel

Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.

Empire Mfg. Co., 615½ Hampshire St., Quincy, Ill.

Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 115.)

Flour City Ornamental Iron Co., Minneapolis, Minn.

French & Hecht, Third & Farnum Sts., Davenport, Ia.

Geneva Metal Wheel Co., Geneva, O.

Grid-Iron-Grip Co., Safety Bldg., Rock Island, Ill.

Hayes Wheel Co., Horton St., Jackson, Mich.
 Hoosier Wheel Co., Shelby Rd. & Big Four R. R., Franklin, Ind.

Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.

Mastodon—See Standard Steel Castings Co.

P. T.—See Wharton, Jr., & Co.

Peru Plow & Wheel Co., Peru, Ill.

Reliance Wheel Co., Federal Bldg., Youngstown, O.

Standard Parts Co., Cleveland, O.
 (See page 283.)

Standard Steel Castings Co., Hickox Bldg., Cleveland, O. "Mastodon."

W & K—See Whitehead & Kales Co.

Wharton, Jr., & Co., Wm., Easton, Pa. "P.T."

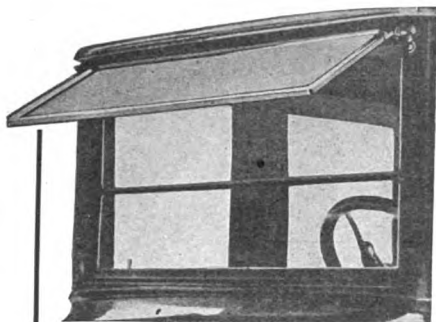
Whitehead & Kales Co., Michigan & Beecher Sts., Detroit, Mich.

WHEELS, TRUCK—See **Wheels, Cast Steel**;
 also **Wheels, Wood**

WHEELS, WIRE AIRPLANE—See **Wheels, Airplane Wire**

WHEELS, WIRE—See **Wheels, Demountable Wire**; also **Wheels, Non-Demountable Wire**

Everything is listed under the NOUN or principal word



*The New "TRIPLEX" (All-Metal) Windshield
VISOR and RAIN-GUTTER*

REPLACEMENT PARTS FOR
Buick — Chandler — Dodge — Hudson
Essex — Overland

ALSO

PISTONS AND PINS
For All Cars, Trucks and Motors

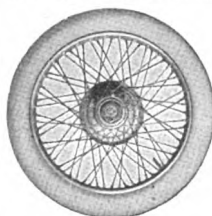
Manufactured and Guaranteed by

C. A. CATHCART

161 Mass. Ave.

BOSTON, 17, MASS

**THESE WILL PUT YOU RIGHT
WITH YOUR TRADE**



Simplex, the "Quicker-change wheel, is the most beautiful as well as the strongest wire wheel made. Hub-cap is integral part of wheel, which can be changed in a jiffy. The beauty, quality and price of Simplex wheels combine to make easy sales and big profits for dealers.

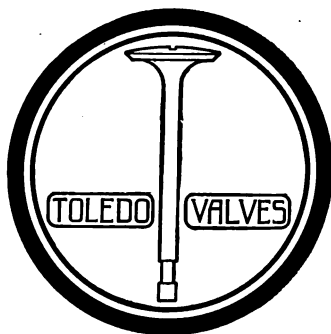
Write for big selling proposition

Live territory open. Export Department
Automotive Products Corp., New York City

**SIMPLEX WIRE WHEEL
COMPANY**

CADILLAC

MICHIGAN



BECAUSE of their quality and consistent performance have established for themselves an enviable reputation, and are now considered **STANDARD EQUIPMENT** by many of the largest and most discriminating manufacturers of motors, trucks, tractors, pumps, compressors, motor cars, engines, locomotives and motorcycles in this country and abroad.

THE TOLEDO STEEL PRODUCTS COMPANY

Formerly THE LEWIS STEEL PRODUCTS COMPANY

TOLEDO, OHIO

Please mention The Automobile Trade Directory

WHEELS, Wood

Acorn—See Crane & MacMahon.
Archibald Wheel Co., 148 West St., Lawrence, Mass.
Baltimore Hub Wheel & Mfg. Co., Baltimore, Md. (See page 749.)
Blitt Wood—See Hoopes, Bro. & Darlington.
Bimel Spoke & Auto Wheel Co., Portland, Ind. (See page 1055.)
Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis Ind. (Sales Representatives.) (See page 835.)
Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill. (See pages 794 and 795.)
Crane & MacMahon, St. Marys, O. "Acorn," "Hickory Nut."
Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, O.
Eames & Co., A. M., Framingham, Mass.
Eberly & Orris Mfg. Co., Mechanicsburg, Pa.
Empire Wheel Works, 610 South St., Utica, N. Y.
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 115.)
Harris Co., 1 Northampton St., Easthampton, Mass.
Hayes Motor Truck Wheel Co., St. Johns, Mich.
Hayes Wheel Co., Horton St., Jackson, Mich.
Hickory Nut—See Crane & MacMahon.
Hoopes, Bro. & Darlington, West Chester, Pa. "Blitt Wood."
Imperial Wheel Co., Richfield Rd., Flint, Mich.
Jones & Co., Phineas, 305 Market St., Newark, N. J.
Kelsey Wheel Co., Detroit, Mich. (See page 1061.)
Meeker Mfg. Co., Linden & Huffman Aves., Dayton, O.
Merrill, F. S., 8 Oakland St., Amesbury, Mass.
Motor Wheel Corp., Lansing, Mich. (See pages 883 and 884.)
Mutual Wheel Co., 709 Third Ave., Moline, Ill.
Northern Wheel Co., Alma, Mich.
Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
Royer Wheel Co., Aurora, Ind. (See page 1057.)
Schwartz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
Smith & Co., Inc., Geo. W., Philadelphia, Pa. "Woodink." (See page 979.)
Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.
Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill.
Wayne Wheel Co., Newark, N. Y.
Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.

WHEELS, Wood, for Fords

(For Demountable Wheels—See Wheels, Demountable)

Baltimore Hub Wheel & Mfg. Co., Baltimore, Md. (See page 749.)
Evans-Lawrie Co., 708 Beacon St., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 115.)
Hayes Wheel Co., Horton St., Jackson, Mich.
Imperial Wheel Co., Richfield Rd., Flint, Mich.
Motor Wheel Corp., Lansing, Mich. (See pages 883 and 884.)
Mutual Wheel Co., 709 Third Ave., Moline, Ill.
Northern Wheel Co., Alma, Mich.

Presto Inter-Rim Co., 340 Commonwealth Ave., Boston, Mass.
Royer Wheel Co., Aurora, Ind. (See page 1057.)
Schwartz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
Smith & Co., Inc., Geo. W., Philadelphia, Pa. "Woodink." (See page 979.)
Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.

WHEELS, Wood Disc

(For Metal Disc Wheels—See Wheels, Metal Disc.
 For other Demountable Wheels—See also Wheels, Demountable Wire.)

Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, Ohio. "Discwood."
Discwood—See Dayton Automotive Wheel Co.
Pennsylvania Hardware & Paint Co., Woolworth Bldg., New York, N. Y.

WHEELS, Wood Disc for Fords

(For Metal Disc Wheels—See Wheels, Metal Disc.
 For other Demountable Wheels—See also Wheels, Demountable Wire.)

Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, Ohio. "Discwood."
Discwood—See Dayton Automotive Wheel Co.

WHIPCORD, Upholstery

American Mills Co., 895 Broadway, New York, N. Y.
American Woolen Co. of N. Y., 225 Fourth Ave., New York, N. Y.
Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 255 and 309.)
Roy Woolen Co., 500 Broadway, Watervliet, N. Y.
Seamans & Cobb Co., Boston, Mass. "Seaco." (See page 514.)
Seaco—See Seamans & Cobb Co.
Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)
Terhune, Gereance & Wolf, 215 Fourth Ave., New York, N. Y. (Mill Agents.) (See page 259.)
Toledo Auto Fabrics Co., Toledo, O. (See page 257.)
Waterloo Woolen Mfg. Co., 233 E. Main St., Waterloo, N. Y.

WHISTLES, EXHAUST—See Horns, Exhaust

WHISTLES, EXPLOSION—See Horns, Exhaust

WICKING, Candle

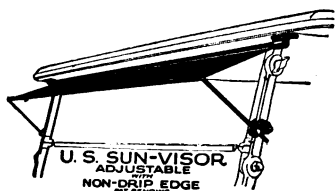
Estes Mills, Fall River, Mass. "Sterling."
Favorite—See Lees Mfg. Co.
La Favorite—See Lees Mfg. Co.
Lees Mfg. Co., 320 Broadway, New York, N. Y.
"La Favorite," "Octagon."
Octagon—See Lees Mfg. Co.
Sterling—See Estes Mills.
Westport Mfg. Co., Fall River, Mass.

Everything is listed under the NOUN or principal word



U. S. Sun-Visor

The U. S. Sun-Visor is adjustable to suit the vision of any particular driver. It is made of 20 gauge body steel, beautifully black enameled for all makes of cars. It will not loosen or rattle when properly installed according to the simple directions. It not only adds to the appearance of the car but makes driving a pleasure by eliminating sun-glare in the daytime and blinding headlights at night.



PATENTED NON-DRIP EDGE

The patented non-drip edge keeps rain and snow off the windshield and the rolled top eliminates the use of screws except for fastening the brackets. Quickly and easily installed by anyone.

For Ford Cars, Closed or Open.....\$5.00
For All Makes of Closed Cars..... 7.50
For All Makes of Open Cars..... 8.50

We also manufacture the U. S. Thermo-Shutter complete with Louvre Slides to close the side openings of the hood.....\$10.00

Dealers write for full information and trade prices

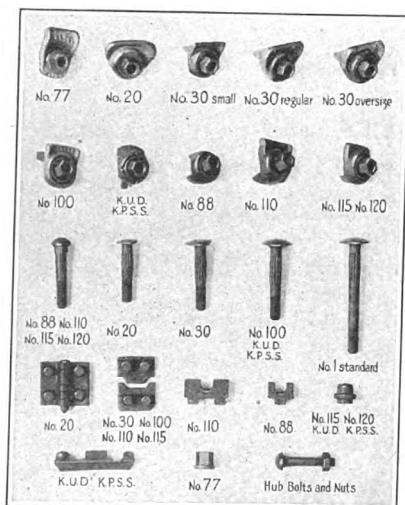
U. S. AUTO EQUIPMENT CO.

Milwaukee and Michigan Sts.,
Milwaukee, Wis.

KELSEY ACCESSORIES

Fully Covered by Patents

All Clamps and Wedges Show Patent Number or Date



Immediate delivery of the genuine parts can be made by our distributors:

Standard Tire & Rubber Co.,
104 Portland St.,
Boston, Mass.

Jacob Mattern & Sons, Inc.,
215 West 53rd St.,
New York City

Motor Rim Mfg. Company,
1835 E. 24th St.,
Cleveland, Ohio

Chicago Wheel & Rim Co.,
2010 Wabash Avenue,
Chicago, Ill.

Kansas City Wheel & Rim Co.,
1522 Grand Ave.,
Kansas City, Mo.

Keaton Tire & Rubber Co.,
San Francisco, Oakland and Los Angeles, Calif.;
Seattle, Wash.; Portland, Ore.

KELSEY WHEEL CO., Inc.
DETROIT MICHIGAN

Please mention The Automobile Trade Directory

WICKING, Felt Lubricator

(For Sheet Felt—See Felt, Sheet; for Felt Washers—See Washers, Felt)

Advance Felt & Cutting Co., 315E. S. Jefferson St., Chicago, Ill. (See page 403.)
 American Felt Co., 100 Summer St., Boston, Mass. (See page 403.)
 Atlantic Felt Cutting Co., 93d St. and Fourth Ave., Brooklyn, N. Y. (See page 407.)
 Booth Felt Co., 403-73 19th St., Brooklyn, N. Y. (See pages 401 and 1041.)
 Brawley, T. R., 275-77 20th St., Brooklyn, N. Y. (See pages 401 and 1041.)
 Felters Co., Millbury, Mass. (See page 405.)
 Lyons Felt Co., 338 Myrtle Ave., Dept. A., Brooklyn, N. Y. (See page 405.)
 Western Felt Works, 4115-33 Ogden Ave., Chicago, Ill.

WICKING, LUBRICATOR—See Wicking, Felt Lubricator

WICKS, Lamp

Consolidated Duck Co., 86 Worth St., New York, N. Y.
 Lees Mfg. Co., 320 Broadway, New York, N. Y.
 Octagon—See Lees Mfg. Co.

WINCHES and BLOCKS, Car Extracting

(Devices for pulling cars out of mud or sand)

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Auto-Lad."
 Auto Accessories Co., Wheeling, W. Va. "Haberstick."
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo. "Dublservis."
 Auto Climb Out & Shovel Co., Havenrich Bldg., Saginaw, Mich.
 Auto Extractor Mfg. Co., 41 S. 15th St., Philadelphia, Pa.
 Auto-Lad—See Alsteel Mfg. Co.
 Auto Traction Trac Co., Berlin, N. J.
 Cherry—See Laurent-Cherry Pulley Block Co.
 Dublservis—See Auto Bed Camp Mfg. Co.
 Haberstick—See Auto Accessories Co.
 Keepers, J. C., 218 W. Park St., Olathe, Kans.
 Laurent-Cherry Pulley Block Co., 110 Lafayette Ave., Trenton, N. J. "Cherry."
 Pekor Iron Works, Columbus, Ga.
 Pull-U-Out Products Co., 1627 Locust St., St. Louis, Mo.
 Rose Auto Puller Co., Rosemont, Neb.

WINCHES, Truck

(For applying to trucks to facilitate loading; for Truck Cranes—See Cranes, Truck.)

Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 1063.)
 Brownhoist—See Brown Hoisting Machinery Co.
 Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."
 Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.
 Hendrickson Truck Crane Co., Peoples Gas Bldg., Chicago, Ill.

Hammell Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Mead-Morrison Winches.) (See page 493.)
 Mead-Morrison Mfg. Co., 1035 Prescott St. (E. Boston), Boston, Mass.
 Memphis Pullblock Co., 938 Union Ave., Memphis, Tenn.
 Silent Hoist Co., 302-04 McDougall St., Brooklyn, N. Y.
 Truck Engineering Co., 7081 Broadway, Cleveland, O.

WIND SHIELD CLEANERS—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

WIND SHIELD GLASS—See Glass, Polished Plate

WIND SHIELD HINGES—See Hinges, Wind Shield

WIND SHIELD SCREENS—See Screens, Wire Wind Shield

WIND SHIELD SPOTLIGHTS—See Lights, Spot

WIND SHIELD VENTILATORS—See Ventilators, Wind Shield

WIND SHIELD VISORS—See Visors

WIND SHIELD WEATHER STRIPS—See Strips, Wind Shield Weather

WIND SHIELD WINGS—See Shields, Auxiliary Wind

WIND SHIELD WIPERS—See Cleaners, Glass Wind Shield

WIND SHIELDS—See Shields, Wind

WINDINGS, ARMATURE—See Windings, Starter and Ignition

WINDINGS, FIELD COIL—See Windings, Starter and Ignition

WINDINGS, MAGNETO—See Windings, Starter and Ignition

WINDINGS, Starter and Ignition

Arrow Mfg. Co., 618-22 Broadway, Toledo, O.
 Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 205.)
 Dudlo Mfg. Co., Wall St., Fort Wayne, Ind.
 Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.
 U. S. Auto Supply Co., 3845 S. Wabash Ave., Chicago, Ill. (See page 749.)

WINDOW GLASS—See Glass, Polished Plate

WINDOW REGULATORS—See Regulators, Window

WINDOWS, CURTAIN—See Windows, Glass Curtain

WINDOWS, CURTAIN, FOR FORDS—See Lights, Curtain

Everything is listed under the NOUN or principal word

BAY CITY CAPSTANS AND WINCHES

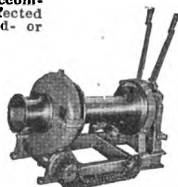
Bay City "F" Capstan



For general truck duty.
See circular 308.

for Motor Trucks
If you want a special attachment on your truck for accomplishing your particular task, write us. One of our perfected designs of capstans, horizontal drum winches, or hand- or power-operated cranes may solve the problem.

Bay City "D" Winch

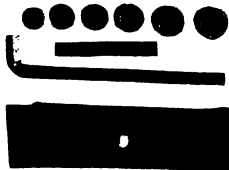


AGENTS
L. V. Hopkins.....111 So. Detroit St., Tulsa, Okla.
C. W. Whitney Co., 439 California St., San Francisco, Cal.
Bay City Winch Sales Co., 3370 Gratiot Ave., Detroit, Mich.
Simplex Commercial Body Co.....1172 Jefferson Ave., Buffalo, N. Y.
Moline Parts Corp.....140 W. 55th St., New York City
Heli Northwestern Sales Co.....Pellam & Anthony Aves., St. Paul, Minn.
Auto Truck Steel Body Co., 3024 Carroll Ave., Chicago, Ill.
Rogers-Schmitt Wire & Iron Co.....2305 Maiden Lane, St. Louis, Mo.
A. Lange Mfg. Co.....3224 Vile St., Milwaukee, Wis.

**BAY CITY FOUNDRY & MACHINE CO. 1610 Water Street
Bay City - Mich.** Especially adapted to telephone and heavy loading work. See circular 311.

"GETS" ANY NUT— —ANY PLACE

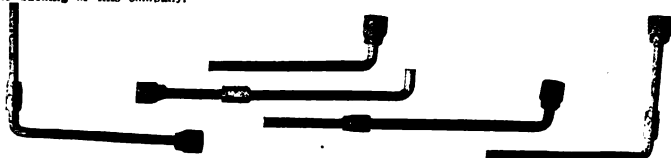
DEALERS: Any nut, any place—even in the ordinarily most inaccessible parts of a car—can be reached with ease with this handy little tool. The great usefulness, low cost and compactness of this set make it popular with motorists everywhere.



The Little 2 by 2 by 8 Set Complete
Can Be Put Anywhere

DEALERS: Our discounts to the trade are liberal. We want more dealers all over the country to stock Fitzall Socket Wrench Sets. Dealers now carrying these sets find that their many useful features make them ready sellers everywhere. A post-card will bring you full information. Write us today.

The Fitzall Socket Wrench Set as shown above consists of 6 sockets of different sizes, a handle, an extension and a neat leatherette carrying case. These sockets are carefully machined from solid steel bars and guaranteed against breaking. Being made in standard sizes, they will fit a surprisingly large number of nuts on every make of car. A spring and ball are used to hold sockets on handle and extension, but since both spring and ball are hardened, there will always be tension. This set makes the carrying of many different wrenches unnecessary. On the inside of each package of Fitzall Socket Wrench Sets you will find a printed guarantee which has the full and absolute backing of this company.



Fitzall Wrench Co.

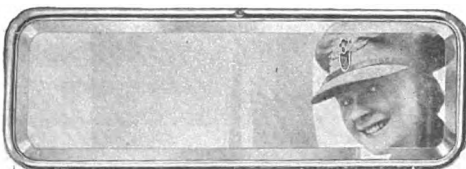
9353 St. Paul Avenue

Detroit, Michigan

Stewart Curtain Windows

Rust-proof, Rattle-proof, Leak-proof

8"x20" Oblong
6"x24" Oblong
\$10.00
8"x24" Oblong
\$14.00
5"x10" Oval
\$4.00



6"x12" Oval
\$5.00
8"x16" Oval
\$7.00
9"x10" Tri-
angle, \$7.50

Slight increase in
prices west of
100th meridian

STEWART-WARNER SPEEDOMETER CORP., CHICAGO, U. S. A.

Please mention The Automobile Trade Directory

WINDOWS, Glass Curtain

(Bevel glass window with metal and wood frame for use in place of celluloid lights in top curtains)

- A. L. Z.—See Auto Curtain Glass Co.
 Auto Curtain Glass Co., 333 Shrewsbury St., Worcester, Mass. "A. L. Z."
 Campbell Co., A. S., 161 Prospect St. (E. Boston), Boston, Mass. "Cello."
 Cello—See Campbell Co.
 Classic—See Smith & Co.
 Economy—See Perfection Co.
 Ere Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
 Glass Curtain Top Co., 4631 John R St., Detroit, Mich.
 Grip-Tite—See Soss Mfg. Co.
 Ideal—See Metal Stamping Co.
 Johnston Mfg. Co., William R., 451-400 E. Ohio St., Chicago, Ill. (See page 653.)
 K. & S. Mfg. Co., 2544 S. Western Ave., Chicago, Ill.
 Kantleak—See Scherer & Co.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Ideal."
 Perfection Auto Window Co., 6527 Featherstone St., Culver City, Cal.
 Perfection Co., 400 W. Ohio St., Chicago, Ill. "Economy." (See page 1065.)
 Powers Mfg. Co., Waterloo, Iowa. (See page 581.)
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Classic."
 Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y. "Grip-Tite."
 Snaplock Co., Guardian Bldg., Cleveland, O.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 1063.)
 Ten Bick, Cornelius, 253 W. 47th St., New York, N. Y. (Dealers.) (See page 377.)
 W. B.—See Wildenberg Bros.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 263.)
 Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."
 Wisconsin Top Co., Racine, Wis. (See page 985.)

WING COATINGS, AIRPLANE—See Coatings, Airplane Wing; also Varnish, Airplane

WING NUTS—See Nuts, Thumb

WING SCREWS—See Screws, Thumb

WING SOCKET PLATES, Airplane—See Plates, Airplane Wing Socket

WINGS, GLASS WINDSHIELD — See Shields, Auxiliary Wind

WIPERS and POLISHING CLOTHS

(For Cotton Waste—See Waste, Cotton)

- Acme Mills Co., 1337 Beaubien St., Detroit, Mich.
 American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.
 American Mill Ends Co., 1934 Gratiot Ave., Detroit, Mich.
 Basco—See Baylis Sanitary Supply Co.
 Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."
 Blakeley & Son, John, 1089 Germantown Ave., Philadelphia, Pa.

- Blank, Irving, 727 Seventh Ave., New York, N. Y.
 Cadillac Paper Co., 191 E. Hancock Ave., Detroit, Mich.
 Chicago Sanitary Bag Co., 2137-48 S. Loomis St., Chicago, Ill.
 Columbus Washed & Sterilized Wiper Co., 88 W. Maple St., Columbus, O.
 Consumers Paper Co., 555 Beaufault Ave., Detroit, Mich. "Worthmore."
 Corner, Edward, 1080 Beach St., Philadelphia, Pa.
 Detroit Mill Ends Co., 562 Gratiot Ave., Detroit, Mich.
 Fidelity—See Hagy Waste Works.
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Gross & Co., E., 90-96 Avon St., Hartford, Conn.
 Hagy Waste Works, J. Milton, Philadelphia, Pa. "Fidelity." (See page 301.)
 Hagy & Son, Clayton L. 16th & Carpenter Sts., Philadelphia, Pa.
 Hoffman-Corr Mfg. Co., 318 Lafayette St., New York, N. Y.
 Imperial—See Rath Mfg. Co.
 Klein Waste Products Corp., 73-75 Church St., Albany, N. Y.
 Leshner Paper Stock Co., 501 Fifth Ave., New York, N. Y.
 Lyman Co., John R., 119 Liberty St., Springfield, Mass.
 Masco—See Massasoit Mfg. Co.
 Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."
 Mill Remnants Co., 19 Bond St., New York, N. Y. "Mireco."
 Mireco—See Mill Remnants Co.
 North & Son, Jos. W., Sixth St., Elizabeth, N. J.
 Northwestern Sanitary Wiping Bag Co., 1015 Holden St., Chicago, Ill.
 Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.
 Peerless Sanitary Wiping Materials Co., 367-73 Fulton St., Brooklyn, N. Y.
 Quality—See Sanitary Wiping Cloth Co.
 Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."
 Royal Mfg. Co., Rahway, N. J. (See page 1047.)
 Sani-Mist Co., 16 Home St., New London, Conn.
 Sanitary Wiping Cloth Co., 2261 S. Union Ave., Chicago, Ill. "Quality."
 Scheinman & Co., I. L., 974 Sherman St., Detroit, Mich.
 Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.
 Standard Waste & Bag Co., 234 W. 27th St., New York, N. Y.
 Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa.
 Trunsky & Co., Peter, 1001 Adelaide St., Detroit, Mich.
 Worthmore—See Consumers Paper Co.

WIRE, Airplane Stream Line

Macwhite Co., Kenosha, Wis.

WIRE BELTS—See Belts, Spiral Wire

WIRE BROOMS—See Brooms, Steel Wire

WIRE BRUSHES—See Brushes, Wire Buffing

Everything is listed under the NOUN or principal word

PERFECTION

Beveled Glass Curtain Windows

The Complete Line—60 Styles—A Style to Suit Every Requirement

Perfection Windows offer the last word in finished motor car curtain windows.

Used on side and rear curtains they beautify and bring up to date the oldest cars as well as complete new car equipment.

THE PERFECTION TYPE WINTER ENCLOSURE is the first practical and really fine-appearing winter enclosure designed for open cars. Rapidly displacing other types. Quick and easy to build. Write for complete circular.

Perfection Curtain Windows are used as standard equipment by car manufacturers.

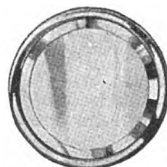
All live jobbers and dealers carry stock. Naturally they are preferred by high-grade trimmers and top makers.



No. 19—Size 7x5". Price \$3.20
No. 22—Size 10x7½". Price 4.50



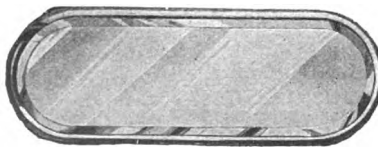
No. 27—Size 30x6". Price.....\$ 8.00
No. 36—Size 20x8". Price..... 9.00
No. 47—(Packard Roadster.) Size 19x9". Price..... 10.50
No. 57—Size 24x6". Price..... 8.50



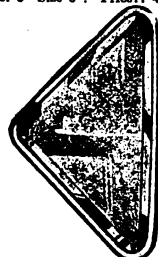
No. 4—Size 4". Price..\$2.50
No. 6—Size 6". Price.. 3.00
No. 8—Size 8". Price.. 4.25



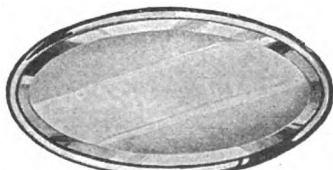
No. 101—Right and Left.
Size 9x10". Price..\$7.75



No. 44—Size 24x8". Price.....\$11.00
No. 46—(Pierce-Arrow.) Size 32x8". Price..... 16.00
No. 51—Size 9x4½". Price..... 4.00
No. 53—Size 18x8". Price..... 7.50
No. 55—Size 24x6". Price..... 8.50



No. 66—Size 16x9".
Price.....\$8.00



No. 9—Size 8½x4½". Price.....\$3.00
No. 12—Size 12 x8". Price..... 4.50
No. 16—Size 16 x8". Price..... 8.00
No. 20—Size 19½x10". Price..... 9.50



No. 48—Size 8x4". Price.....\$4.00
No. 50—Size 12x8". Price..... 5.50
No. 52—Size 16x8". Price..... 7.00
No. 54—Size 24x8". Price..... 9.00



No. 56—Size 24x8". Price.....\$9.00

We also furnish glass of every kind for automobiles, windshield glass, sedan and limousine glass and headlight glass.

THE PERFECTION COMPANY
400 W. Ohio St. CHICAGO, ILLINOIS

Please mention The Automobile Trade Directory

WIRE BUFFING BRUSHES—See Brushes,
Wire Buffing

WIRE CABLE—See Rope

WIRE CLOTH—See Cloth, Wire

WIRE DEMOUNTABLE WHEELS—See
Wheels, Demountable Wire

WIRE FERRULES, AIRPLANE—See Thim-
bles and Ferrules, Airplane Wire

WIRE, FLEXIBLE CONTROL—See Cable,
Flexible Control

WIRE GAGES—See Gages, Drill and Wire

WIRE, Insulated

(Including Ignition wires and cables, starter cables
and wire for lighting circuits)

American Brass Co., Waterbury, Conn.
(See page 165.)

American Electrical Works, Phillipsdale, R. I.
American Steel & Wire Co., Chicago, Ill.
"Amerite," "Americore."
(See page 819.)

Americore—See American Steel & Wire Co.
Amerite—See American Steel & Wire Co.
B. I. W.—See Boston Insulated Wire & Cable
Co.

Belden Mfg. Co., 2300 S. Western Ave.,
Chicago, Ill. "Beldenmold."
(See page 295.)

Beldenmold—See Belden Mfg. Co.
Bishop Gutta-Percha Co., 420 E. 25th St.,
New York, N. Y. (See page 315.)

Boston Insulated Wire & Cable Co., Bos-
ton, Mass. "B. I. W." (See page 317.)
Bourn Rubber Co., 53 Warren St., Providence,
R. I. "Star."

Crescent Insulated Wire & Cable Co., Olden
Ave. & Taylor St., Trenton, N. J.

Ecco—See Habirshaw Electric Cable Co.
Empire Rubber & Tire Co., Mulberry St. &
Clinton Ave., Trenton, N. J.

General Electric Co., Schenectady, N. Y.
(See page 779.)

Goodrich Co., B. F., 8 Main St., Akron, O.
Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
"M. F." (See page 987.)

Habirshaw Electric Cable Co., Yonkers, N. Y.
"Ecco."

Hasard Mfg. Co., 81 E. Ross St., Wilkes-
Barre, Pa.

Indiana Rubber & Insulated Wire Co., Jones-
boro, Ind. "Paranite."

Kerite Insulated Wire & Cable Co., New
York, N. Y. (See page 1007.)

McCarthy Bros. & Wilson, 2220 Chestnut
St., Philadelphia, Pa. (Dealers.)
(See page 613.)

MP—See Goodrich-Lenhart Mfg. Co.

National India Rubber Co., Bristol, R. I.
New York Insulated Wire Co., 114 Liberty St.,
New York, N. Y.

Okonite Co., Passaic, N. J.

Packard Electric Co., Warren, O.
Paranite—See Indiana Rubber & Insulated
Wire Co.

Rex Ignition Mfg. Co., 250 W. 54th St.,
New York, N. Y. (See page 815.)

Roebbing's Sons Co., John A., S. Broad & Canal
Sts., Trenton, N. J.

Rome Wire Co., Rome, N. Y.
(See page 939.)

Safety Insulated Wire & Cable Co., 114 Lib-
erty St., New York, N. Y.

Simplex Wire & Cable Co., 201 Devonshire St.,
Boston, Mass.

Standard Underground Cable Co., Westing-
house Bldg., Pittsburgh, Pa.

Star—See Bourn Rubber Co.

White, J. M., 1116-22 Olive St., Philadel-
phia, Pa. (See page 837.)

Whitney Blake Co., New Haven, Conn.
(See page 827.)

WIRE, Phosphor Bronze

American Brass Co., Waterbury, Conn.
(See page 165.)

Omega—See Riverside Metal Co.
Phosphor Bronze Smelting Co., 2300 Wash-
ington Ave., Philadelphia, Pa.
Riverside Metal Co., Riverside, N. J. "Omega."

WIRE PROTECTORS, AIRPLANE—See
Protectors, Rubber Fuselage Wire

WIRE ROPE—See Rope, Wire

WIRE ROPE CLAMPS—See Clamps, Wire
Rope

WIRE SOLDER—See Solder, Bar and Wire

WIRE SPOKES—See Spokes, Wire

WIRE, SPRING—See Wire, Steel Spring

WIRE, Steel Spring

American Steel & Wire Co., Chicago, Ill.
(See page 819.)

Blancke Co., L. C., 10-13 Thomas St., New
York, N. Y. (Sole Distributors for Blancke
Steel Co., Taunton, Mass.)

Blancke Steel Co.—See Blancke Co.
Helmuth Co., L., 17 Battery Pl., New York,
N. Y. (Importers.)

Interstate Iron & Steel Co., 104 S. Michi-
gan Ave., Chicago, Ill. (See page 905.)

Roebbing's Sons Co., John A., S. Broad & Canal
Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.
Wickwire-Spencer Steel Corp., Worces-
ter, Mass. (See pages 649 and 819.)

WIRE STREAMLINING, AIRPLANE—See
Streamlining, Airplane Wire

WIRE TERMINAL FORMING TOOLS—
See Tools, Wire Terminal Forming

WIRE TERMINALS—See Terminals, Wire

WIRE THIMBLES, AIRPLANE—See Thim-
bles and Ferrules, Airplane Wire

WIRE TIMER GUARDS FOR FORDS—See
Guards, Timer Wire

WIRE WHEELS, NON-DEMOUNTABLE—
See Wheels, Non-Demountable Wire

**WIRE WRAPPING MACHINES, AIR-
CRAFT**—See Machines, Aircraft Wire
Wrapping

Everything is listed under the NOUN or principal word

KERITE

A product of over fifty years' distinguished service in the most important electrical fields possessing inherent characteristics which make it preeminently desirable for high tension automotive ignition.



KERITE INSULATED WIRE & CABLE COMPANY
NEW YORK CHICAGO

BET-ROG TRADE MARK SOCKET WRENCHES

For the man who demands:

QUALITY—a wrench that will not tear out or collapse under load—that is built of the finest grade of wrench steel, heat treated and finished.

CONVENIENCE—a set that allows 125 different combinations—permits the user to reach the most out of the way places.

GUARANTEE—that if any socket breaks in use it will be replaced—no questions asked.

See our advertising in the trade papers or send for complete information about

BET-ROG SOCKET WRENCHES
TRADE MARK

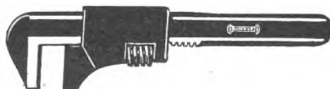
BURTON-ROGERS CO.
755 Boylston St., Boston, Mass.
Sales Department for
Robinson Equipment Co., Waltham, Mass.

An Important Message To All Who Use or Sell Wrenches

This is a message to everyone in the automotive trade, who either sells wrenches or has occasion to use them in their daily work.

A short time ago one of the largest manufacturing companies in the world was in the market for drop forge wrenches—quality and price was to determine the line of wrenches they would purchase.

The test was a severe one. Nuts were threaded on the bolts and were set up until either the bolt or the wrench was broken.



The final result of this test proved so satisfactory with Lakeside Wrenches, that they gave us their contract.

Not even a book of a thousand pages could speak more eloquently for wrenches than the above test.

In a word, the result of the above test should conclusively prove to you that when you are in the market for drop forge wrenches and our stock wrenches for resale to your customers, that your final choice should be — Lakeside Wrenches.

We will gladly send you our complete catalog upon request.

Write us today.

Lakeside Forge Co.
Erie, Pennsylvania

WIRING ASSEMBLIES FOR FORDS—See Sets, Wiring

WIRING CHARTS, ELECTRIC—See Charts, Electric Wiring

WIRING CLEATS—See Cleats, Fibre Wiring

WIRING CONDUIT—See Conduit, Flexible Car Wiring

WIRING HARNESS FOR FORDS—See Sets, Wiring

WIRING, IGNITION, FOR FORDS—See Sets, Wiring

WIRING MACHINES—See Machines, Fender Wiring

WIRING SETS FOR FORDS—See Sets, Wiring

WOOD BATTERY BOXES—See Boxes, Wood Battery

WOOD BENDINGS—See Bendings, Wood

WOOD BODIES—See Bodies, Wood

WOOD BORING MACHINES—See Machines, Wood Boring

WOOD DASHES—See Dashes, Wood

WOOD DISC WHEELS—See Wheels, Wood Disc

WOOD FILLERS, AIRCRAFT—See Fillers, Aircraft Wood

WOOD MUD GUARDS—See Fenders or Mud Guards, Wood

WOOD PANELS—See Panels, Wood

WOOD PARTS—See Parts, Wood

WOOD PLANERS—See Planers, Wood

WOOD PRIMERS, AIRCRAFT—See Primers, Aircraft Wood

WOOD SCREWS—See Screws, Wood

WOOD SHAPERS—See Shapers, Wood

WOOD TRUCK CABS—See Cabs, Wood Truck

WOOD WHEEL MANUFACTURERS ASSOCIATION—See Associations and Societies

WOOD WHEEL TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

WOOD WHEELS—See Wheels, Wood

WOOL, Steel

American Steel Wool Mfg. Co., 9-13 Desbrosses St., New York, N. Y. "Ideal."
Buehne Steel Wool Co., 98 Nassau St., New York, N. Y.

Ideal—See American Steel Wool Mfg. Co.
Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill.

WORM DRIVE REAR AXLES—See Axles, Worm Drive Rear

WOVEN BELTS—See Belts

WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

WRAPPING MACHINES, WIRE AIRCRAFT—See Machines, Aircraft Wrapping

WRECKING CASTORS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING SPARE WHEELS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING TRUCKS—See Trucks, Castors and Spare Wheels, Wrecking

WRENCH BOXES—See Boxes, Wrench and Small Tool

WRENCHES, ADJUSTABLE—See Wrenches, Nut and Bolt

WRENCHES, ALLIGATOR—See Wrenches, Nut

WRENCHES, BOLT—See Wrenches, Nut

WRENCHES, DROP FORGED—See Wrenches, Nut

WRENCHES, Grease Cup
Stepanian Mfg Co., Columbus, O.

WRENCHES, Hub Cap, for Fords
Edelmann & Co., E., 2638 N. Crawford St., Chicago, Ill.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. (See page 843.)
Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
Mossberg Co., Frank, Attleboro, Mass. (See page 1069.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
Onkes Co., Indianapolis, Ind. (See page 397.)

WRENCHES, MONKEY—See Wrenches, Nut and Bolt

Everything is listed under the NOUN or principal word



MOSSBERG

ALL STEEL WRENCHES AND TOOLS

A business-building line.

The dealer who sells Mossberg Tools not only makes a good profit—he gets a quick turnover on his stock and builds up his trade through satisfied customers.

The completeness of the Mossberg line makes the possibility of a sale greater. There is a wrench or tool for every purpose.

The garage man, the motorist, the expert mechanic, each with his individual requirements may find the right wrench among your Mossberg stock.

The Mossberg reputation for strength and service helps you to make your sales—it builds up your business.

WRITE FOR COMPLETE 1921 CATALOG

BRANCH OFFICES

Chicago, Ill., 180 N. Market
St.
San Francisco, Cal., 626 Underwood Bldg.
Los Angeles, Cal., 503 Equitable Bldg.

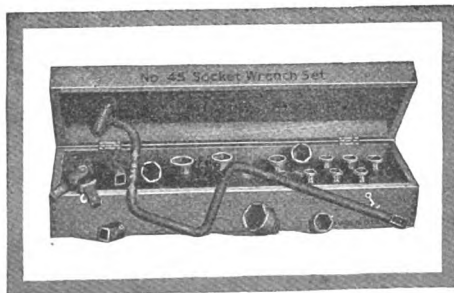
Seattle, Wash., 214 Maritime Bldg.
Dallas, Tex., 1129 N. Beckley Ave.

Atlanta, Ga., 314-315 Chamber of Commerce Bldg.
Foreign Sales Office, 461 8th Ave., New York City.
Montreal, Que., Drummond Bldg.

Walter I. Tuttle—President and General Mgr.

Frank T. Chase—Treasurer and Sales Mgr.

Everett L. Ford—Secretary and Supt.



Please mention The Automobile Trade Directory

WRENCHES, Nut and Bolt

- Alderman—See Mossberg Co.
 All-Purpose—See Motor Parts Co.
 Allan & Co., A. C., Morris, Ill.
 Allan-Diffenbaugh Wrench & Tool Co., Baraboo, Wis., "Kant-Slip."
 Allen Mfg. Co., 135 Sheldon St., Hartford, Conn.
 Allen Wrench & Tool Co., Public & Eddy Sts., Providence, R. I.
 American Grinder Mfg. Co.—See Jonas, C. N. & F. W.
 American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. "Sixset." (See page 371.)
 Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 357.)
 Arrow Tool Co., 778 Kensington Ave., Buffalo, N. Y.
 Art Metal Works, Aronson Sq., Newark, N. J. "Ronson." (See page 495.)
 Atco Wrench Co., 127 E. Spring St., Lima, O.
 Athol Machine Co., Athol, Mass.
 Auto Cle—See Mossberg Co.
 Auto Queen—See C. M. B. Wrench Co.
 B. & C.—See Bemis & Call Hardware & Tool Co.
 Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y. "King Dick."
 Bay State Autokit—See Shultis Automotive Corp.
 Bay State Pump Co.—See Shultis Automotive Corp.
 Becco—See Michigan Motor Specialties Co.
 Bemis & Call Hardware & Tool Co., 933 Main St., Springfield, Mass. "B. & C."
 Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y. "Queen City."
 Bersted Mfg. Co., 765 Mather St., Chicago, Ill. (See page 515.)
 Bet-R-Bilt—See Burton-Rogers Co.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Billmont—See Guthard Co.
 Blackhawk—See Jonas, C. N. & F. W.
 Bonney Forge & Tool Works, Allentown, Pa.
 Bornstein & Co., Ipswich, Mass.
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Buckeye—See Central Brass & Fixture Co.
 Bufum Tool Co., Louisiana, Mo. (See page 395.)
 Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Robinson Equipment Co., Boston, Mass. "Bet-R-Bilt.") (See page 1007.)
 C. M. B. Wrench Co., Garwood, N. J. "Silver King," "Auto Queen."
 C. M. & D.—See Chicago Mfg. & Distributing Co.
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Carl—See Robinson Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Champlon—See Syracuse Wrench Co.
 Cheney Hammer Corp., H., Little Falls, N. Y.
 Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."
 Code Mfg. Co., Chicago, Ill. (See pages 845 and 1075.)
 Coes Wrench Co., Coes Sq., Worcester, Mass.
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 759.)
 Crescent Tool Co., 204 Harrison St., Jamestown, N. Y.
 Crocodile—See Lakeside Forge Co.
 Cushman Co., Inc., Champaign, Ill. (See page 479.)
 Diamond—See Ferodowill Mfg. Co.
 Diamond—See Mossberg Co.
 Diamond Jay-Dee Co., 2335 Michigan Ave., Chicago, Ill.
 Easy Way—See Lawrence Mfg. Co.
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Department for Rosel Co., Wm. E., Columbus, O. "5 in 1.")
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Sexto-Rench," "Han-D."
 Edstrom Machinery Co., Cary, Ill. (See page 817.)
 Efficiency Device Corp., 198 Eighth St., Long Island City, N. Y.
 Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.
 Erie Tool Works, 11th & French Sts., Erie, Pa.
 Evans Mfg. Co., 620-22 E. 63rd St., Chicago, Ill.
 Ever-Ready—See Lakeside Forge Co.
 Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 243.)
 Fawco—See Faw Co.
 Fitzall Wrench Co., 9353 St. Paul Ave., Detroit, Mich. (See page 1063.)
 5 in 1—See Eckhouse & Co., Walter.
 Gogle Hand—Forged Tool Co., 1941 Polk St., San Francisco, Cal.
 Goodell-Pratt Co., Greenfield, Mass.
 Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. (See page 695.)
 Gripsall—See Mossberg Co.
 Guernsey, C. C., Darry, N. H.
 Guthard Co., Edgar C., 861 E. Ohio St., Chicago, Ill. "Billmont."
 Han-D—See Edelmann & Co.
 Handy—See Lakeside Forge Co.
 Harris & Reed Mfg. Co., 1510-23 W. 15th St., Chicago, Ill.
 Hawkeye—See Lakeside Forge Co.
 Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.
 Herbrand Co., 109-35 E. State St., Framont, O.
 Hergl Mfg. Co., Bridgeport, Conn.
 Hexall—See Sedgley, R. F.
 Hill Pump Valve Co.—See Zinke Co.
 Hjorth & Co., Wm., 23 Taylor St., Jamestown, N. Y.
 Holley Tool Mfg. Co., 1011 S. 12th St., Omaha, Neb.
 Humboldt—See Republic Auto Parts Co.
 Hy-Speed Wrench Co., 2620 W. 48th St., Chicago, Ill. "Quicklamp."
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for American Grinder Mfg. Co., Milwaukee, Wis. "Blackhawk.")
 Kant Slip—See Allan-Diffenbaugh Wrench & Tool Co.
 Kettler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
 Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."
 Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Saxon."
 King Dick—See Barcalo Mfg. Co.
 King Pressed Steel & Mfg. Co., Boston, Mass.
 Kokomo Wrench Co., Kokomo, Ind.

Everything is listed under the NOUN or principal word



SOCKET WRENCHES

FOR

**TRUCKS—PASSENGER CARS—TRACTORS
AND GENERAL MECHANICAL SERVICE**

**DEMOUNTABLE RIM WRENCHES
TEE AND OFFSET HANDLE WRENCHES
COMBINATION SOCKET WRENCH SETS
SPECIAL GARAGE SERVICE SETS**

WALDEN-WORCESTER ARE THE ORIGINATORS AND PATENTEES OF WIRE HANDLE ALL STEEL SOCKET WRENCHES WHICH HAVE BEEN SUCCESSFULLY MANUFACTURED SINCE 1906. WALDEN-WORCESTER-WRENCHES ARE DESIGNED AND MANUFACTURED TO MEET THE MOST EXACTING SERVICE CONDITIONS AND ARE RECOGNIZED EVERYWHERE AS STANDARD QUALITY TOOLS

WRITE FOR CATALOG No. 200

WALDEN-WORCESTER

INCORPORATED

WORCESTER, MASS., U. S. A.

SALES OFFICES

CHICAGO
452 MONADNOCK BLDG.

NEW YORK
295 BROADWAY

SAN FRANCISCO
437 MONADNOCK BLDG.

Please mention The Automobile Trade Directory



WRENCHES, Nut and Bolt (Continued)

- Krauter & Co., Newark, N. J. (See page 1001.)
- L. & L. Mfg. Co., 184 High St., Newark, N. J.
- Lakeside Forge Co., Erie, Pa. "Crocodile," "Ever-Ready," "Handy," "Hawkeye," (See page 1007.)
- Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
- Lane Unique Tool Co., Will B., 180 N. Dearborn St., Chicago, Ill.
- Largo Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill.
- Larson Tool & Stamping Co., Olive St., Attleboro, Mass.
- Lawrence Mfg. Co., F. K., 20 E. Lake St., Chicago, Ill. "Easy Way." (See page 125.)
- Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
- Lutz Co., Morris-Bambrey & Moore Sts., Philadelphia, Pa. (See page 293.)
- McKays Drop Forge Co., 14 Perry St., Buffalo, N. Y.
- Martin & Co., Edward, 23 S. Clinton St., Chicago, Ill. "Perfection."
- Masco—See Mayer Auto Accessories Corp.
- Mayer Auto Accessories Corp., 452-54 Ellicott St., Buffalo, N. Y. "Masco."
- Mayhew Steel Products, 291 Broadway, New York, N. Y.
- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
- Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich. (See page 981.)
- Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.
- Mossberg Co., Frank, Attleboro, Mass. "Sterling," "Diamond," "Alderman," "National," "Auto Cle," "Gripsall." (See page 1008.)
- Motor Parts Co., Ambridge, Pa. "All-Purpose."
- National—See Mossberg Co.
- National Jack & Mfg. Co., 180-34 S. Clinton St., Chicago, Ill.
- Necedah Mfg. Co.—See Jonas, C. N. & F. W.
- New Britain Mfg. Co., 216 S. Main St., New Britain, Conn.
- New England Forge Co., 9 Plymouth St., Worcester, Mass.
- New England Pressed Steel Co., Washington Ave., Natick, Mass.
- Niagara Falls Metal Stamping Works, 235-47 Tenth St., Niagara Falls, N. Y. "Pokitrench." "chiz."
- Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."
- Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
- Peerless Wrench Co., 98 Sprague St., Providence, R. I.
- Perfect Handle—See Smith & Co.
- Perfection—See Martin & Co.
- Pexto—See Peck, Stow & Wilcox Co.
- Pick-Up—See New Britain Mfg. Co.
- Pokitrenchis—See Niagara Falls Metal Stamping Works.
- Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.
- Queen City—See Bergman Tool Mfg. Co.
- Quicklamp—See Hy-Speed Wrench Co.
- Radio—See Stadeker Metal Specialty Co.
- Ray—See Packer Auto Specialty Co.
- Red Chief Mfg. Co., Louisville, Ky. "L. G."
- Red Devil—See Smith & Hemenway.
- Republic Auto Parts Co., 21-25 Tenth St., Long Island City, N. Y. "Humboldt," "Sterling."
- Robinson Co., M. W., 298 Broadway, New York, N. Y. "Caril." (See page 1075.)
- Robinson Equipment Co.—See Burton-Rogers Co.
- Ronson—See Art Metal Works.
- Rosel Co.—See Eckhouse & Co.
- S. & I. Co., 55-57 Governor St., Springfield, Mass.
- Saxon—See Kilborn & Bishop Co.
- Scholler Mfg. Co., 147 Leslie St., Buffalo, N. Y.
- Sedgley, R. F., 2311-13 N. 16th St., Philadelphia, Pa. "Hexall."
- Sexto-Rench—See Edelmann & Co.
- Shaw Propeller Co., 574 Cambridge St., Allston, Mass.
- Shultis Automotive Corp., 16-22 W. 61st St., New York, N. Y. (Sole Distributors for Bay State Pump Co., So. Boston, Mass. "Bay State Autokit" and "Stickit.")
- Silver King—See C. M. B. Wrench Co.
- Sixset—See Armand Machine Works.
- Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
- Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
- Snake Handle Wrench Co., 915 Reaney St., St. Paul, Minn.
- Snap-On Wrench Co., 134 Reed St., Milwaukee, Wis.
- Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Radio."
- Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
- Star Mfg. Co., Carpentersville, Ill.
- Starrett Co., L. S., Athol, Mass.
- Sterling—See Mossberg Co.
- Sterling—See Republic Auto Parts Co.
- Sterling Products Co., 35 S. Desplaines St., Chicago, Ill. (Distributors.) (See page 997.)
- Stickit—See Shultis Automotive Corp.
- Superior—See Williams & Co.
- Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "Champion."
- Trimco—See Trimont Mfg. Co.
- Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimco."
- Universal Wrench Co., 3067 E. Grand Blvd., Detroit, Mich. (See page 997.)
- Utility—See Zinke Co.
- Vicsek Tool Co., Cleveland, O.
- Wakefield, C. E., 89 Exchange St., Worcester, Mass. "Wizard." (See page 847.)
- Walden - Worcester, Inc., Worcester, Mass. (See page 1071.)
- Whitaker Mfg. Co., Chicago, Ill. (See page 1075.)
- Williams & Co., J. H., 28 Richard St., Brooklyn, N. Y. "Superior." (See page 1073.)
- Wizard—See Wakefield, C. E.
- Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 687.)

WRENCHES, Oil Cock, for Fords

- (For opening or closing crank case drain cock or oil test cock without getting under car)
- American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Original." (See page 77.)
- Auto Metal Parts Co., 624 Michigan Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word



For Automobilists

Williams' Superior Drop-Forged Wrench Sets

THERE are times when the possession of one of these wrench sets would save serious delay and annoyance and repay many times its cost.

Set No. 2-S Consists of 5 Wrenches

10 different openings (no duplicates) for S. A. E. Standard Nuts and Cap Screws.

Set No. 4 Consists of 6 Wrenches

12 different openings (no duplicates) for U. S. Standard Nuts and Cap Screws.

Set No. 5-S Consists of 5 Wrenches

10 different openings (no duplicates) for S. A. E. Standard Nuts and Cap Screws.

Their cost is surprisingly low, and their convenience a constant source of satisfaction. Every tool measures up to Williams' Superior Standard and no better wrench can be had anywhere, at any price.

*Write for our booklet of Superior Wrench Sets
showing 28 different assortments*

J. H. Williams & Co.

"The Wrench People"

BROOKLYN
38 Richard St.

BUFFALO
38 Vulcan St.

CHICAGO
1038 W. 120th St.

St. Catharines, Ontario, Canada

WRENCHES, Oil Cock, for Fords (Continued)

Bayne Mfg. Co., Bushnell, Ill.
(See page 669.)
Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Dow Wire & Iron Works, Louisville, Ky.
(See page 159.)
Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawasco." (See page 243.)
Fawasco—See Faw Co.
Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 249.)
Handy Products Co., Erie Bldg., Cleveland, O.
Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.
Mac-Dan Co., 2414 Indianola Ave., Columbus, O.
Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
Original—See American Automatic Devices Co.
Radco—See Stader Metal Specialty Co.
Stadco—See Stader Metal Specialty Co.
Stader Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
W-A—See Whetstone & Co.
Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WRENCHES, OPEN END—See Wrenches, Nut

WRENCHES, Pipe

Armstrong Mfg. Co., 335 Knowlton St., Bridgeport, Conn.
Bonney Forge & Tool Works, Allentown, Pa. "Vixen."
Cochran—See Larco Wrench & Mfg. Corp.
Como—See Mechanical Specialties Co.
Edstrom Machinery Co., Cary, Ill.
(See page 817.)
Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.
Erie Tool Works, 11th & French Sts., Erie, Pa.
Greenfield Tap & Die Corp., Greenfield, Mass. (See page 915.)
Hjorth & Co., Wm., 38 Taylor St., Jamestown, N. Y.
Ideal—See Kroeschell Bros. Co.
Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."
Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Ideal."
Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."
Leader—See Ripley Pipe Wrench Co.
Lutz-Webster Engineering Co., 31st St. & Grays Ferry Rd., Philadelphia, Pa.
Mechanical Specialties Co., 122 S. Michigan Ave., Chicago, Ill. "Como."
Moore Drop Forging Co., 336 Birnie Ave., Springfield, Mass.
Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.
Page-Storms Drop Forge Co., Chicago, Ill.
Perfect Handle—See Smith & Co.
Ripley Pipe Wrench Co., Ripley, N. Y. "Leader."
Roebbing's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.

Shaw Propeller Co., 574 Cambridge St., Allston, Mass.
Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
Stillson—See Walworth Mfg. Co.
Trimco—See Trimont Mfg. Co.
Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimco."
Vixen—See Bonney Forge & Tool Works.
Vulcan—See Williams & Co.
Wakefield, C. E., 89 Exchange St., Worcester, Mass. (See page 347.)
Walworth Mfg. Co., 998 First St., Boston, Mass. "Stillson."
Westcott—See Keystone Mfg. Co.
Whitaker Mfg. Co., Chicago, Ill.
(See page 1075.)
Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. "Vulcan."
(See page 1073.)

WRENCHES, REAMER—See Wrenches, Nut

WRENCHES, SOCKET—See Wrenches, Nut

WRENCHES, SOLID—See Wrenches, Nut

WRENCHES, SPARK PLUG—See Wrenches, Nut

WRENCHES, Special, for Fords

(Including Special Wrench Sets, Spark Plug Wrenches, etc.)

Allen Wrench & Tool Co., Public & Eddy Sts., Providence, R. I. "Eureka."
Armand Machine Works, 442-50 N. Wells St., Chicago, Ill. (See page 371.)
Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
Bay State Autokit—See Bay State Pump Co.
Bay State Pump Co., 500 E. First St. (8. Boston), Boston, Mass. "Bay State Autokit."
Bet-R-Bilt—See Burton-Rogers Co.
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
Billmont—See Guthard Co.
Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Robinson Equipment Co., Boston, Mass. "Bet-R-Bilt.") (See page 1067.)
C. M. B. Wrench Co., Garwood, N. J.
Danielson Tool Co., Fulton St., Wausau, Wis.
Dixie—See Tuthill Sales Co.
E-Z—See Reschke Machine Works Co.
Eureka—See Allen Wrench & Tool Co.
Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawasco." (See page 243.)
Fawasco—See Faw Co.
Graham Roller Bearing Co., Coudersport, Pa. (See page 227.)
Guthard Co., Edgar C., 361 E. Ohio St., Chicago, Ill. "Billmont."
Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.
Hill Pump Valve Co.—See Zinke Co.
Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 429.)
Kettler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
King Pressed Steel & Mfg. Co., Boston, Mass.

Everything is listed under the NOUN or principal word

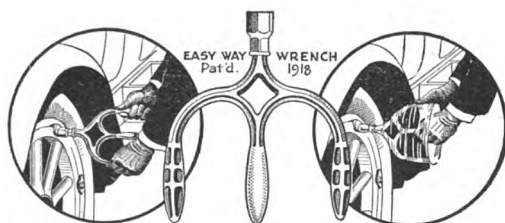
CODE UNIVERSAL WRENCH



The CODE WRENCH takes the place of 150 special wrenches, made of the finest steel material, hardened and ground, and fits 24 different size 'code sockets'. The CODE WRENCH is 12 1/2 inches long, can be extended to 29" long, and will turn ratchet right and left or complete revolution. Every interchangeable part, plunger and socket, lock automatically. Enamel finish and nickel trimming.

Price to Consumer, \$20.00

CODE MFG. CO., Ltd.
Chicago, U. S. A.



First, loosen the Nut This Way

Then Spin it Off This Way

A rim wrench scientifically correct in principle and immensely superior to all other types.

THE EASYWAY WRENCH

Price \$1.00

Gives twice the leverage.
Easily moves rusted on nuts.
Will not slip and skin your knuckles.
Does not round off nut corners.

F. K. Lawrence Mfg. Co.
20 E. Lake St.
Chicago



CARLL WRENCHES

For Nut or Pipe

6 in., 8 in. and 10 in.

Thin, Wide Range and Very Strong

M. W. ROBINSON CO.

296 Broadway
NEW YORK



TRIPLE DIAMOND FILES



TWIST DRILLS, CARBON AND H. S.

Works:
Clearing, Ill.

Gen. Office:
Chicago, Ill.

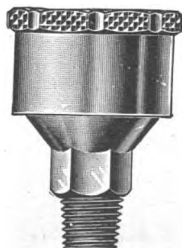


DROP FORGED WRENCHES

THE WHITAKER MANUFACTURING CO.

Works: Clearing, Ill.

General Office: Chicago, Ill.



GREASE CUPS

Please mention The Automobile Trade Directory

WRENCHES, Special, for Fords (Continued)

Lane Unique Tool Co., Will B., 180 N. Dearborn St., Chicago, Ill.
 Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.
 Mitchell Wrench Co., 1828 N. 17th St., St. Louis, Mo.
 Mossberg Co., Frank, Attleboro, Mass. (See page 1068.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill. (See page 83.)
 New England Pressed Steel Co., Washington Ave., Natick, Mass.
 Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."
 Panther—See B. A. T. Co.
 Peoria—See Auto Mechanics Tool Co.
 Ray—See Standard Motor Parts Co.
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "E-Z."
 Robinson Equipment Co.—See Burton-Rogers Co.
 Southern Machine & Tool Co.—See Tuthill Sales Co.
 Standard Motor Parts Co., 1420 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Packer Auto Specialty Co., Chicago, Ill. "Ray.")

Tuthill Sales Co., St. Louis, Mo. (Sole Distributors for Southern Machine & Tool Co., St. Louis, Mo. "Dixie.")
 (See page 641.)

Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb.

Utility—See Zinke Co.

Walden - Worcester, Inc., Worcester, Mass. (See page 1071.)

Williams & Co., J. H., 38 Richard St., Brooklyn, N. Y. (See page 1073.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.")
 (See page 687.)

WRIST WATCHES, AVIATORS'—See Watches, Aviators' Wrist

YOKE ENDS—See Yokes, Special

YOKES, Special

Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J. "Gemmer."
 Gemmer—See Ford Mfg. Co.

SECTION 3

Reference Tables
data, formulae, re-
ports on tests and
S. A. E. standards.
Directory of Na-
tional Trade Asso-
ciations.

*A complete Index
to this section
will be found on the
pages immediately
following.*

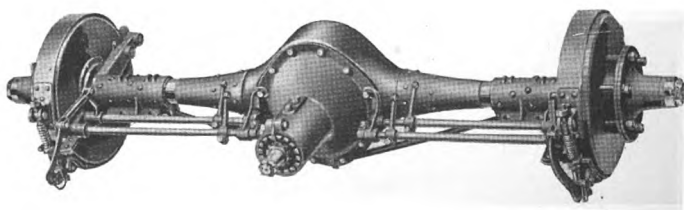




SALISBURY AXLES

AS the product of the oldest institution in the industry, Salisbury Axles have long been known among motorists for the exceptional quality of their service. Since the earliest days of the automobile they have been universally acknowledged as setting a standard of axle construction that has never been surpassed.

Judged by the opinion of thousands of motor car owners who base their determination upon actual fact, Salisbury Axles have made a notable contribution to the enjoyment of motor-ing. The care and precision exercised in their manufacture have resulted in a product which has won general recognition for being uniformly good.



SALISBURY AXLE COMPANY, JAMESTOWN, N. Y., U. S. A.

SECTION III

Index to Tables and Data

A	G
Acme Standard Thread.....1125-1126	Gages—Tables of.....1117-1118
Air—Capacity for Water Vapor.....1147	Gallons—Capacity of Tanks.....1127
Air Pressures.....1091-1092	Generator Mountings.....1155-1156
American Automobile Ass'n.....1163	German Horsepower Formula.....1083
Anti-Freezing Mixtures.....1096	Grades—Measurement of Road.....1097
Areas of Circles.....1127 to 1131	
Automotive Equipment Ass'n.....1167	
B	H
Ball Bearings—S. A. E. Standard.....1150 to 1161	Heat Units—Equivalent Values of.....1144-1145
Bases, Pump.....1150	Hexagon Head Screws—S. A. E. Stand- ard.....1165
Baumé Scales.....1095	Hill Climbing Formula.....1092-1093
Belts, Fan—S. A. E. Standard.....1116	Horsepower—Table of Electrical.....1085
Boiling Points of Water at Various Altitudes.....1147	Horsepower Formulas.....1081 to 1084
Bolts and Nuts—S. A. E. Standard.....1165	Horsepower Tables.....1084
Brake Lining—S. A. E. Standard.....1115	
Brakes, Work Done by.....1111	I
British Horsepower Formula.....1090	Inflation Pressures of Pneumatic Tires.....1099-1100
	International 60° Standard Screw Threads.....1124
C	K
Car Speed Figured from Revolutions of Wheels.....1089-1090	Keyseats—Tables of Dimensions.....1110
Carburetor Fittings—S. A. E. Standard.....1151-1152	Keyways—Tables of Dimensions.....1110
Castings—Estimates of Weight of.....1119	Kilogram Calories.....1146
Chains—Nomenclature of Roller.....1114	Kilograms per Square Centimeter— Equivalent in Pounds per Square Inch.....1136
Chains, Sprocket—Length of.....1113	
Chains—Width of—Silent.....1112	L
Chord, Length of.....1132	Lining—S. A. E. Standard Brake.....1115
Circles—Areas of.....1127	Liquid Gallons—Capacity of Cylindrical Tanks.....1127
Circles—Circumferences and Areas of.....1127 to 1131	Lock Washers—S. A. E. Standard.....1158
Circles—Table for the Division of.....1132	Lubricating Oils—Sample Specifications.....1153
Clutches—Formulas for.....1111-1112	
Conductivity of Metals.....1146	M
Conversion Table—Metric.....1143	Magnetos—Dimensions of.....1153-1154
Conversion Table—U. S. Official Milli- metres.....1135	Manufacturers Aircraft Association.....1169
Cylinder—Piston, Displacement of.....1186	Measurement of Grades from a Car.....1098-1099
Cylinders—Oversize—S. A. E. Standard.....1158	Metals—Weight of.....1141
Cylindrical Tanks—Capacities of.....1127	Metric Conversion Table.....1143
	Metric Tires and Their American Equiva- lents.....1107
D	Millimetres Conversion Table.....1135
Decimal Equivalent of Fractions of an Inch.....1133	Mixtures—Anti-Freezing.....1098
Decimal Fractions of a Linear Inch in Millimetres.....1134	Motor, Piston Displacement of.....1086
Dimensions for Solid Tires.....1106-1107	Motor Truck Association of America.....1169
Drill Sizes for Standard Threads.....1124	Motor and Accessory Manufacturers' Association.....1168
	Mountings—Fuel Vacuum Tank—S. A. E. Standard.....1101
E	Mountings for Ignition Distributor.....1157
Electrical Horsepower.....1085	Mountings for Starting Motors.....1156
Electrical, Mechanical and Heat Units.....1144-1145	
Electrical Units—Equivalent Values of.....1144-1145	N
Engines—Piston Displacement of.....1086	National Automobile Chamber of Com- merce.....1167
Equivalent Values of Electrical, Mechan- ical and Heat Units.....1144-1145	National Automobile Dealers' Ass'n.....1169
Equivalent—Table of Metric.....1107	Non-Ferrous Metal Tubing Tolerances.....1115
	Nuts—S. A. E. Standard and Plain.....1166
F	Nuts and Bolts—S. A. E. Standard.....1166
Fan Belts—S. A. E. Standard.....1115	
Formula for Rate of Speed.....1087 to 1090	O
Formulas—Hill Climbing.....1092-1093	Odometer Readings.....1090
Formulas for Clutch and Brake.....1111-1113	Oils, Lubricating.....1153
Formulas for Horsepower.....1081 to 1084	
Fractions—Equivalents of in Millimetres.....1143	P
French Horsepower Formula.....1083	Pins, Yoke and Eye Rod End—S. A. E. Standard.....1149-1150
Functions of n—Numerical Values of.....1166	
Fusion Points of Metals.....1146	

Piston Displacements—Condensed Table of	1086
Piston Ring Grooves—Width and Depth of	1108
Plugs, Spark—S. A. E. Standard	1164
Pounds per Square Inch, Equivalent to Kilograms per Square Centimeter	1136
Pressure, Air and Wind	1091-1092
Pump Bases—Engine Driven Tire	1150

R

Resistance Wind—Power Required to Overcome	1091-1092
Rim Data	1100
Road Grades—Measurement of	1098-1099
Road Grades and Angles of Inclination	1099
Roadability Formula	1162
Roller Bearings—S. A. E. Standard	1114
Roller Chains—Nomenclature of	1127
Round Tanks—Capacities of	1127
Rubber Association of America	1168

S

S. A. E. Standard Annular Ball Bearings	1150 to 1161
S. A. E. Standard Base Bends for Solid Tires	1106-1107
S. A. E. Standard Brake Lining	1115
S. A. E. Standard Carburetor Fittings	1151-1152
S. A. E. Standard Dimensions Solid Tires	1106
S. A. E. Standard Fan Belts	1115
S. A. E. Standard Felloe Bands	1101
S. A. E. Standard Flange Mountings for Generators	1155-1156
S. A. E. Standard Generator Mountings	1155-1156
S. A. E. Standard Hexagon Head Screws, Castle and Plain Nuts	1165
S. A. E. Standard Ignition Distributor Mountings	1157
S. A. E. Standard Large Diameter Thread	1166
S. A. E. Standard Lock Washers	1158
S. A. E. Standard Magneto Dimensions	1153-1154
S. A. E. Standard Oversize Cylinders	1158
S. A. E. Standard Pneumatic Tires	1099 to 1101
S. A. E. Standard Pump Bases	1150
S. A. E. Standard Roller Bearings	1162
S. A. E. Standard Roller Chains	1114
S. A. E. Standard Screw Threads	1124
S. A. E. Standard Spark Plugs	1164
S. A. E. Standard Starting Cranks	1157
S. A. E. Standard Steel Bands and Strips	1116
S. A. E. Standard Steel Tubes	1116
S. A. E. Standard Tank Mountings—Vacuum Fuel	1101
S. A. E. Standard Tire—Pneumatic—Rim Set Test	1100-1101
S. A. E. Standard Tire Pump Bases	1150
S. A. E. Standard Yoke and Eye Rod Ends	1148-1149
S. A. E. Standard Yoke and Eye Rod Pins	1149-1150
Scales—Baumé	1095
Scales—Thermometer	1094-1095
Screw Threads—Acme Standard	1125-1126
Screw Threads—International Standard 60°	1124
Screw Threads—S. A. E. Standard—Drill	1124
Sleece for	1123
Screw Threads—Whitworth Standard	1123
Screws—S. A. E. Standard Hexagon Head	1165
Silent Chains—Widths of	1112
Small Circles—Areas of	1127
Society of Automotive Engineers	1167
Spark Plugs—S. A. E. Standard	1164
Specific Gravity Equivalents of Hydro-metre Readings	1095
Speed Tables	1087 to 1088
Speedometer Readings	1090
Sprocket Chains—Length of	1113
Starting Cranks—S. A. E. Standard	1120
Steel—Weight of Flat	1116
Steel Bands and Strips	1116
Steel Tubes—Stock Sizes of Seamless	1116

T

Table of Chord Length Given Arc	1132
Table of Conversion of Kilograms to Pounds	1136

Table of Conversion of Weights, Measures and Money Values	1141-1142
Table of Dimensions—Keyseats and Keyways	1110
Table for the Division of Circles	1132
Table of Kilogramme Calories Equivalent to British Thermal Units	1146
Table for Measurement of Grades	1098-1099
Table of Metric Equivalents	1107
Table of Road Gradients	1097
Tables—U. S. Official Millimetres Conversion	1135
Tables—Electrical Horsepower	1035
Tables of Gages	1117-1118
Tables—Horsepower	1084
Tables of Screw Threads	1087-1088
Tables—Speed	1127
Tanks—Capacity of Cylindrical	1093
Tests—Complete Car Performance	1094-1095
Thermometer Scales	1125-1126
Thread, Acme Standard	1126
Thread—S. A. E. Standard—Large Diameter	1166
Thread—U. S. 60° Screw	1122
Thread—Whitworth Standard	1123
Threads—S. A. E. Standard—Drill Sizes of	1125
Threads—Table of Standard	1125
Tire Loads and Inflation Pressure	1102 to 1105
Tires—American Equivalent of Metric	1107
Tires—Dimensions for Solid	1106-1107
Tires, Pneumatic—Carrying Capacities and Inflation Pressures of	1099 to 1100
Tires, Solid—Widths of	1106-1107
Trailer Manufacturers Ass'n of America	1169
Tubes, Steel—Stock Sizes of Seamless	1116
Two Cycle Engines, Horsepower Formula for	1083

U

Units of Weights and Measures	1137 to 1140
U. S. Official Millimetres Conversion Table	1135
U. S. 60° Screw Thread	1122

V

Variation of Volume and Temperature with Compression	1147
--	------

W

Washers Lock—S. A. E. Standard	1158
Water—Boiling Points of—At Various Altitudes	1147
Weights of Balls	1121
Weight of Castings Extracted from Weight of Wood Patterns	1119
Weight of Round, Square and Octagon Steel	1119-1120
Weight of Sheet and Bar Aluminum, Brass and Steel	1121
Weight, Measures and Money Values	1141-1142
Conversion of	1141
Weight of Metals	1107
Wheel Diameters for Various Sizes and Types of Rims	1107
Wheel Revolutions—Figuring Car Speed from	1089-1090
Widths of Silent Chains	1112
Wind Pressures	1091-1092
Wind Resistance	1091-1092
Wood Wheel Diameters	1107

Y

Yoke and Eye Rod End Pins—S. A. E. Standard	1149-1150
Yoke and Eye Rod Ends—S. A. E. Standard	1148-1149
Yoke	1166
n—Functions of	1168
American Automobile Association	1167
Automotive Equipment Association	1169
Manufacturers Aircraft Association	1169
Motor Truck Association of America	1169
Motor and Accessory Manufacturers Association	1168
National Automobile Chamber of Commerce	1167
National Automobile Dealers Association	1168
Rubber Association of America	1167
Society of Automotive Engineers	1167
Trailer Manufacturers Ass'n of America	1169

SECTION III.

Tables and Data

Nine Horsepower Formulas

One horsepower (HP or hp) is the unit denoting the power required for raising 33,000 lb. 1 ft. in 1 minute, or 550 lb. 1 ft. in 1 second, etc. It equals very nearly 0.746 kw (kilowatt) in electric power measurement. Under the metric system 1 hp equals 0.736 kw or 75 kgm (kilogram-meters) per second. The French hp (*cheval-vapeur*), as well as the German hp (*Pferdestärke* or *Pferdekraft*), thus equals 0.9866 American or British hp or 542.48 foot-pounds per second.

The actual power capacity of an automobile, motor-boat or airplane engine is ascertained by brake-block test or by other means for offering measurable resistance to its work. The term "indicated horsepower," as used for steam engines, is not properly applicable.

A horsepower formula expressing actual power capacity approximately (for a four-cycle engine), if a good value for P is known from current engine practice and tests, may be written

$$(1) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^3 P \times SR}{24 \times 33,000}$$

in which N is the number of cylinders, D the bore diameter in inches, P the mean effective pressure per square inch for the power stroke, S the stroke in inches and R the number of engine revolutions

per minute. In the case of a four-cylinder engine, $\frac{N}{4}$ eliminates itself.

As piston speed, in feet per minute, equals $\frac{SR}{6}$, the stroke S receives consideration incidentally when this formula is written:

$$(2) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^3 P \times V}{4 \times 33,000}$$

in which V is piston speed in feet per minute.

Using metric units, a formula corresponding to (1) is written:

$$(3) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^3 P \times SR}{900,000}$$

in which N is number of cylinders, D bore diameter in cm. (centimeters), P the mean effective pressure in kg (kilograms) per square cm of piston area, S the stroke in cm, and R the number of engine revolutions per minute.

With the metric notations, piston speed c in m (meters) per second, equals $\frac{SR}{100 \times 30}$ and formula (3) can therefore also be written:

$$(4) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^3 P \times c}{300}$$

(Continued on following page)

Nine Horsepower Formulas—Continued

These formulas are mainly useful for comparing the values for P obtained with different sizes and designs of engines and at different speeds for any given engine, the horsepower being first decided by test. In using them for determining horsepower from dimensions and design features, the difficulty is encountered that P has a fluctuating value. It includes the percentage of mechanical efficiency of the engine as a factor and is affected by compression ratio, valve sizes and lifts, valve timing, the weight of reciprocating parts and the nature of the ignition. For any given engine, P decreases after a certain speed has been reached, while the horsepower continues to be increased until the increase of speed is balanced by the reduction of P .

For classification purposes (legislation, taxation, racing rules) and rough estimates, simplified nominal horsepower formulas are used. Those relating to automobile engines of the four-cycle internal-combustion type, operated with gasoline as fuel, are of widest general interest. They are not, as a rule, directly applicable to airplane engines, Diesel or semi-Diesel engines, steam engines or to two-cycle automobile or boat engines.

Nominal and Official Horsepower Formulas for Four-Cycle Automobile and Motor Boat Engines

The most authoritative formula for the United States is that which was adopted by the Association of Licensed Automobile Manufacturers (A. L. A. M.) in the early years of the automobile industry. After the A. L. A. M. ceased to exist, the same formula was approved by the National Automobile Chamber of Commerce (N. A. C. C.). It reads:

$$(5) \text{ Horsepower} = \frac{D^3 N}{2.5}$$

in which D is the bore diameter in inches and N the number of cylinders.

The derivation is given as follows:

The gross horsepower of a single-cylinder, four-cycle engine is equal to one-quarter times the mean effective pressure P , acting throughout the working stroke, times the area of the piston A , in square inches, times the piston speed S divided by 33,000, thus,

$$\text{Gross horsepower} = \frac{P A S}{33,000}$$

Multiplying this by the number of cylinders N gives the gross horsepower for an engine of the given number of cylinders, and further multiplying by the mechanical efficiency of the engine E gives the brake horsepower. Therefore the complete equation for brake horsepower reads:

$$\text{Brake horsepower} = \frac{P A S N E}{33,000 \times 4}$$

The A. L. A. M. assumed that all motor car engines will deliver or should deliver their rated power at a piston speed of 1,000 feet per minute that the mean effective pressure in such engine cylinders will average 90 pounds per square inch, and that the mechanical efficiency will average 75 per cent.

Substituting these values in the above B. H. P. equation, and substituting for A its equivalent, $.7854 D^2$, the equation reads:

$$\text{Brake horsepower} = \frac{90 \times 0.7854 D^2 \times 1,000 \times N \times 0.75}{33,000 \times 4}$$

and combining the numerical values it reduces to:

$$\text{Brake horsepower} = \frac{D^3 N}{2.489}$$

or, in round numbers, with a denominator 2.5.

Another formula of American origin is one proposed by E. P. Roberts. It gives:

$$(6) \text{ Horsepower} = \frac{D^3 L R N}{18,000}$$

in which D and L are bore and stroke in inches, R the number of crankshaft revolutions per minute and N the number of cylinders.

With the same connotation for D and L the Royal Automobile Club of Great Britain and the British Institution of Automobile Engineers have used the formula:

$$(7) \text{ Horsepower} = 0.45 (D + L) (D - 1.18), \text{ for each cylinder.}$$

Nine Horsepower Formulas—Continued

The official German formula by which taxation was regulated until war began in 1914 read

$$(8) \text{ Horsepower} = 0.3 \times id^2s$$

in which i is the number of cylinders, d the bore diameter in cm (centimeters) and s the stroke in m (meters).

The official French formula adopted in 1912 and 1913 has:

$$(9) \text{ Horsepower} = Kn D^2L \times \omega$$

in which K is 0.00020 for single-cylinder engines, 0.00015 for 4-cylinder engines and 0.00013 for engines with more than 4 cylinders. D and L are bore in cm. (centimeters) and stroke in mm (millimeters), n is the number of cylinders, and ω is the practicable maximum number of crankshaft revolutions per second on the road, the determination being subject to the best judgment of the supervising authorities, with consideration of gear ratio and other features of the vehicle in which the engine is used.

For comparison, a modern automobile engine may be rated by each of the formulas (5), (6), (7), (8) and (9) and the difference in results noted. Let the engine have the following characteristics: 4 cylinders, bore 3 inches, stroke 5 inches, mean effective pressure for three-fourths of the working stroke 130 lb., piston speed 2000 feet per minute (2400 r.p.m.), and mechanical efficiency, 75 per cent.

By formula (5) the N. A. C. C., the rating is

$$HP = \frac{36}{2.5} = 14 \frac{2}{5}$$

By formula (6), the E. P. Roberts, it is

$$HP = \frac{9 \times 5 \times 2400 \times 4}{18,000} = 24$$

By formula (7), British I. A. E., it is

$$HP = 0.45 (3 + 5) \times (3 - 1.18) = 3.60 \times 1.82 = 6.552$$

Multiplying by 4, the number of cylinders, gives 26.108.

By formula (8), German official, it is

$$HP = 0.3 \times 4 \times 57.76 \times 0.127 = 8.80$$

By formula (9), French official rating, it is

$$HP = 0.00015 \times 4 \times 57.76 \times 12.7 \times 30 = 13.20$$

on the basis of 1800 r.p.m., with the possibility that the rating may be $\frac{1}{2}$ higher, or 17.60, namely if the maximum engine speed of 2400 r.p.m. is taken as the basis.

Two-Cycle Automobile and Motor Boat Engines

The two-cycle engine has twice as many working strokes as the four-cycle engine, but its horsepower is often figured from a four-cycle formula by multiplying the result by 1.65, instead of by 2, to allow for the usually lessened efficiency (especially the volumetric efficiency or ability to receive a full charge of fuel mixture) of this type at the higher speeds.

HORSEPOWER TABLE BY N.A.C.C. (FORMERLY A.L.A.M.)

In using table, find bore of cylinder in inches or millimeters in the proper left hand column, then read across to right under column for the number of cylinders that the motor under consideration has.

BORE=D		NUMBER OF CYLINDERS=N			
Inches	Millimeters	4	6	8	12
2½.....	64	10.00	15.00	20.00	30.00
2⅝.....	68	11.03	16.54	22.05	33.08
2¾.....	70	12.10	18.15	24.20	36.30
2⅞.....	73	13.23	19.84	26.45	39.68
3.....	76	14.40	21.60	28.80	43.20
3⅛.....	79	15.63	23.44	31.25	46.88
3¼.....	83	16.90	25.35	33.80	50.70
3⅝.....	85	18.23	27.34	36.45	54.68
3½.....	89	19.60	29.40	39.20	58.80
3⅞.....	92	21.03	31.54	42.05	63.08
3¾.....	95	22.50	33.75	45.00	67.50
3⅞.....	99	24.03	36.04	48.05	72.08
4.....	102	25.60	38.40	51.20	76.80
4⅛.....	105	27.23	40.84	54.45	81.68
4¼.....	108	28.90	43.35	57.80	86.70
4⅝.....	111	30.63	45.94	61.25	91.88
4½.....	114	32.40	48.60	64.80	97.20
4⅞.....	118	34.23	51.34	68.45	102.68
4¾.....	121	36.10	54.15	72.20	108.30
4⅞.....	124	38.03	57.04	76.05	114.08
5.....	127	40.00	60.00	80.00	120.00
5⅛.....	130	42.03	63.04	84.05	126.08
5¼.....	133	44.10	66.15	88.20	132.30
5⅝.....	137	46.23	69.34	92.45	138.68
5½.....	140	48.40	73.60	96.80	145.20
5⅞.....	143	50.63	75.94	101.25	151.88
5¾.....	146	52.90	79.35	105.80	158.70
5⅞.....	149	55.23	82.84	110.45	165.68
6.....	152	57.60	86.40	115.20	172.80

Table of Electrical Horsepower

Volts		Amperes											
		1	10	20	30	40	50	60	70	80	90	100	110
1	.00134	.0134	.0268	.0402	.0536	.0670	.0804	.0938	.1072	.1206	.1341	.1475	
5	.00670	.0670	.1341	.2011	.2681	.3351	.4022	.4692	.5362	.6032	.6703	.7373	
10	.01341	.1341	.2681	.4022	.5362	.6703	.8043	.9383	1.072	1.206	1.341	1.475	
15	.02011	.2011	.4022	.6032	.8043	1.005	1.206	1.408	1.609	1.810	2.011	2.212	
20	.02681	.2681	.5362	.8043	1.072	1.340	1.609	1.877	2.145	2.413	2.681	2.949	
25	.03351	.3351	.6703	1.005	1.341	1.676	2.011	2.346	2.681	3.016	3.351	3.686	
30	.04022	.4022	.8043	1.206	1.609	2.011	2.413	2.815	3.217	3.619	4.022	4.424	
35	.04692	.4692	.9384	1.408	1.877	2.346	2.815	3.284	3.753	4.223	4.692	5.161	
40	.05362	.5362	1.072	1.609	2.145	2.681	3.217	3.753	4.290	4.826	5.362	5.898	
45	.06032	.6032	1.206	1.810	2.413	3.016	3.619	4.223	4.826	5.439	6.032	6.635	
50	.06703	.6703	1.341	2.011	2.681	3.351	4.022	4.692	5.362	6.032	6.703	7.373	
75	.10054	1.005	2.011	3.016	4.021	5.027	6.032	7.037	8.043	9.048	10.05	11.06	
100	.13405	1.341	2.681	4.022	5.362	6.703	8.043	9.384	10.72	12.06	13.41	14.75	
500	.67025	6.703	13.41	20.11	26.81	33.51	40.22	46.92	53.62	60.32	67.03	73.73	
1,000	1.3405	13.41	26.81	40.22	53.62	67.03	80.43	93.84	107.2	120.6	134.1	147.5	
5,000	6.7025	67.03	134.1	201.1	268.1	335.1	402.2	469.2	536.2	603.2	670.3	737.3	
10,000	13.405	134.1	268.1	402.2	536.2	670.3	804.3	938.3	1072.	1206.	1341.	1475.	

Rule: Number of volts multiplied by number of amperes = number of horsepower; usually written : $\frac{VA}{746} = \text{hp.}$

Condensed Table of Piston Displacements

For Bores and Strokes progressing by $\frac{1}{16}$ in.

D = bore; S = stroke; A = area in sq. in. of cross-section = $D^2 \times 0.7854$; N = number of cylinders
 Piston displacement = ASN cub. in. = $16.387 ASN$ cubic centimeters.

Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section
By $\frac{1}{16}$ In.	Decimal		By $\frac{1}{16}$ In.	Decimal		By $\frac{1}{16}$ In.	Decimal	
$2\frac{1}{16}$	2.2500	3.9761	$3\frac{1}{16}$	3.5625	9.9678	$4\frac{1}{16}$	4.8750	18.665
$2\frac{1}{8}$	2.3125	4.2000	$3\frac{1}{8}$	3.6250	10.3210	$4\frac{1}{8}$	4.9375	19.147
$2\frac{3}{16}$	2.3750	4.4301	$3\frac{3}{16}$	3.6875	10.6800	5	5.0000	19.635
$2\frac{1}{2}$	2.4375	4.6664	$3\frac{1}{2}$	3.7500	11.045	$5\frac{1}{16}$	5.0625	20.129
$2\frac{5}{8}$	2.5000	4.9097	$3\frac{5}{8}$	3.8125	11.416	$5\frac{1}{8}$	5.1250	20.629
$2\frac{3}{4}$	2.5625	5.1572	$3\frac{3}{4}$	3.8750	11.793	$5\frac{3}{16}$	5.1875	21.135
$2\frac{7}{8}$	2.6250	5.4129	$3\frac{7}{8}$	3.9375	12.177	$5\frac{1}{2}$	5.2500	21.648
$2\frac{9}{16}$	2.6875	5.6727	4	4.0000	12.566	$5\frac{5}{16}$	5.3125	22.166
$2\frac{1}{2}$	2.7500	5.9396	$4\frac{1}{16}$	4.0625	12.962	$5\frac{1}{2}$	5.3750	22.691
$2\frac{11}{16}$	2.8125	6.2126	$4\frac{1}{8}$	4.1250	13.364	$5\frac{3}{8}$	5.4375	23.221
$2\frac{3}{4}$	2.8750	6.4918	$4\frac{3}{8}$	4.1875	13.772	$5\frac{1}{2}$	5.5000	23.758
$2\frac{5}{8}$	2.9375	6.7771	$4\frac{1}{2}$	4.2500	14.186	$5\frac{7}{16}$	5.5625	24.301
3	3.0000	7.0686	$4\frac{3}{4}$	4.3125	14.607	$5\frac{1}{2}$	5.6250	24.850
$3\frac{1}{16}$	3.0625	7.3662	$4\frac{5}{8}$	4.3750	15.033	$5\frac{3}{4}$	5.6875	25.406
$3\frac{1}{8}$	3.1250	7.6699	$4\frac{3}{4}$	4.4375	15.466	$5\frac{1}{2}$	5.7500	25.967
$3\frac{3}{8}$	3.1875	7.9798	$4\frac{7}{8}$	4.5000	15.904	$5\frac{5}{8}$	5.8125	26.535
$3\frac{1}{2}$	3.2500	8.2958	$4\frac{7}{8}$	4.5625	16.349	$5\frac{1}{2}$	5.8750	27.109
$3\frac{5}{8}$	3.3125	8.6179	$4\frac{9}{8}$	4.6250	16.800	$5\frac{3}{4}$	5.9375	27.688
$3\frac{3}{4}$	3.3750	8.9462	$4\frac{11}{16}$	4.6875	17.257	6	6.0000	28.274
$3\frac{7}{8}$	3.4375	9.2806	$4\frac{3}{4}$	4.7500	17.728	$6\frac{1}{16}$	6.0525	28.771
$3\frac{1}{2}$	3.5000	9.6211	$4\frac{1}{2}$	4.8125	18.190	$6\frac{1}{8}$	6.1250	29.465

Multiply the area figure by the stroke, using the decimal column for the stroke figure.
 For example: $D = 3\frac{3}{16}$ in., gives $A = 7.3662$; Stroke = $S = 4\frac{1}{4}$ in. = 4.8750 in.

Multiply 7.3662
by 4.8750

```

      00000
    368311
    515634
    589296
  294648
  
```

35.91022510

As 4 decimals were used in each figure, the period is placed $4 + 4 = 8$ places from the right, making the result 35.9102 cub. in. of piston displacement for each cylinder.

To get piston displacement for the engine, multiply this figure by N, the number of cylinders.

For a 4-cyl. engine, this makes in the example

35.9102 cub. in.
 $\times 4$

143.6408 cub. in. for the engine.

If it is desired to know the equivalent in cm.^3 (cubic centimeters),

Multiply 143.6408
by 16.387

```

    10054856
    11491264
    4309224
    8618448
  1436408
  
```

2353.8417896

As there are 4 decimals in the first figure and 3 decimals in the second, the period comes $4 + 3 = 7$ places from the right, and the total piston displacement of the engine is 2353.842 cm.^3 (cubic centimeters).

Rate of Speed from Elapsed Time and Distance

To find the rate of speed in miles per hour (m.p.h.) from total distance covered and the elapsed time, multiply distance by 60 (minutes) and divide by number of minutes elapsed time.

Example: Distance 105.5 miles; elapsed time 1 h. 53 m. 30 s. or 113 m. 30 s.:

$$60 \text{ times } 105.5 = 6330 \text{ and } \frac{6330}{113.5} = \frac{63,300}{1135} = 55.8 \text{ m.p.h.}$$

Seconds are turned into a decimal fraction of a minute (for convenience in dividing) by dividing their number by 6 and writing the quotient as a decimal, one decimal being ordinarily sufficiently accurate for figuring m.p.h.

For complete accuracy in figuring m.p.h. from distance and elapsed time, multiply distance by 3600 and divide the product by the elapsed time in seconds.

Speed Rules for Measured One Mile or One Kilometer

The preceding general rule for figuring m.p.h. from the distance and the time, in minutes or seconds, is further simplified when the distance in question is the unit—1 mile or 1 kilometer. In either case, divide 3600 by the number of seconds elapsed, to find the rate of speed in m.p.h. or km.p.h., respectively.

General rule: When m {miles
kilometers} are covered in n seconds, the speed in {m.p.h.
km.p.h.} is $\frac{3600}{n} \times m$

The following two tables give the speed in m.p.h. (or km.p.h.) for measured mile (or kilometer) made in from 24 seconds to 3 minutes.

Speed in Miles or Kilometers per Hour Corresponding to Any Elapsed Time from 24 Seconds to 59½ Seconds for 1 Measured Mile or Kilometer, Progressing by ½ Second.

Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour	Time for One Mile or One Kilometer, Seconds	Equal to Miles or Kilometers per Hour
24	150.00	30	120.00	36	100.00	42	85.71	48	75.00	54	66.66		
½	148.76	½	119.20	½	99.44	½	85.30	½	74.68	½	66.42		
1	147.54	1	118.42	1	98.90	1	84.90	1	74.38	1	66.17		
1½	146.34	1½	117.64	1½	98.36	1½	84.50	1½	74.07	1½	65.93		
2	145.16	2	116.88	2	97.82	2	84.11	2	73.77	2	65.69		
25	144.00	31	116.13	37	97.29	43	83.72	49	73.47	55	65.45		
½	142.86	½	115.38	½	96.77	½	83.33	½	73.17	½	65.21		
1	141.73	1	114.65	1	96.25	1	82.95	1	72.87	1	64.98		
1½	140.62	1½	113.90	1½	95.74	1½	82.57	1½	72.58	1½	64.74		
2	139.53	2	113.21	2	95.23	2	82.19	2	72.29	2	64.51		
26	138.46	32	112.50	38	94.73	44	81.81	50	72.00	56	64.28		
½	137.40	½	111.80	½	94.24	½	81.44	½	71.71	½	64.05		
1	136.36	1	111.11	1	93.75	1	81.08	1	71.42	1	63.83		
1½	135.34	1½	110.43	1½	93.26	1½	80.71	1½	71.14	1½	63.60		
2	134.33	2	109.75	2	92.78	2	80.35	2	70.86	2	63.38		
27	133.33	33	109.09	39	92.30	45	80.00	51	70.58	57	63.16		
½	132.25	½	108.43	½	91.83	½	79.64	½	70.31	½	62.93		
1	131.38	1	107.78	1	91.37	1	79.29	1	70.04	1	62.71		
1½	130.43	1½	107.14	1½	90.91	1½	78.94	1½	69.76	1½	62.50		
2	129.50	2	106.51	2	90.45	2	78.60	2	69.49	2	62.28		
28	128.57	34	105.88	40	90.00	46	78.26	52	69.23	58	62.07		
½	127.66	½	105.26	½	89.55	½	77.92	½	68.96	½	61.85		
1	126.76	1	104.65	1	89.11	1	77.58	1	68.70	1	61.64		
1½	125.87	1½	104.04	1½	88.67	1½	77.25	1½	68.44	1½	61.43		
2	125.00	2	103.45	2	88.23	2	76.92	2	68.18	2	61.22		
29	124.13	35	102.85	41	87.80	47	76.59	53	67.92	59	61.01		
½	123.28	½	102.27	½	87.38	½	76.27	½	67.66	½	60.81		
1	122.45	1	101.69	1	86.95	1	75.95	1	67.41	1	60.60		
1½	121.62	1½	101.12	1½	86.53	1½	75.63	1½	67.16	1½	60.40		
2	120.80	2	100.56	2	86.12	2	75.31	2	66.91	2	60.20		

*) To convert miles into kilometers, multiply the miles by 1.6093.
To convert kilometers into miles, multiply the kilometers by 0.6214.

Speed in Miles or Kilometers per Hour for an Elapsed Time of from 1 to 3 Minutes Over a Measured Mile or Kilometer

Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour
Min. Sec.		Min. Sec.		Min. Sec.	
1 0	60.00	1 27	41.38	1 54	31.58
1 1	59.00	1 28	40.91	1 55	31.30
1 2	58.06	1 29	40.45	1 56	31.03
1 3	57.14	1 30	40.00	1 57	30.77
1 4	56.25	1 31	39.56	1 58	30.50
1 5	55.38	1 32	39.13	1 59	30.25
1 6	54.54	1 33	38.71	2 0	30.00
1 7	53.73	1 34	38.29	2 3	29.26
1 8	52.94	1 35	37.89	2 6	28.57
1 9	52.17	1 36	37.50	2 9	27.90
1 10	51.42	1 37	37.11	2 12	27.27
1 11	50.70	1 38	36.73	2 15	26.66
1 12	50.00	1 39	36.36	2 18	26.08
1 13	49.31	1 40	36.00	2 21	25.53
1 14	48.65	1 41	35.64	2 24	25.00
1 15	48.00	1 42	35.29	2 27	24.49
1 16	47.37	1 43	34.95	2 30	24.00
1 17	46.75	1 44	34.61	2 33	23.53
1 18	46.15	1 45	34.28	2 36	23.07
1 19	45.57	1 46	33.96	2 39	22.64
1 20	45.00	1 47	33.64	2 42	22.22
1 21	44.44	1 48	33.33	2 45	21.81
1 22	43.90	1 49	33.03	2 48	21.42
1 23	43.37	1 50	32.72	2 51	21.05
1 24	42.85	1 51	32.43	2 54	20.69
1 25	42.35	1 52	32.14	3 0	20.00
1 26	41.86	1 53	31.86	.. ..	.....

Speed Equivalents for 1 Mile and 1 Kilometer

- 1 mile per hour = 88 ft. per minute.
 = 1.46 ft. per second.
 = 27.8 metres per minute.
 = 0.463 metre per second.
 1 km. per hour = 0.6214 miles per hour.
 = 54.9 ft. per minute.
 = 0.288 metre per second.

Relations between the Speed of a Car and the Number of Revolutions per Minute of the Road Wheels

To find the number of r.p.m. of road wheels, divide the speed in m.p.h. by diameter of wheel in inches and multiply by 336.134.

To find m.p.h. of car, multiply r.p.m. of road wheel by wheel diameter in inches and divide by 336.134.

These rules are derived as follows: 1 m.p.h. equals 88 ft. per minute, or 12 x 88 inches (= 1056 inches) per minute. The circumference of the road wheel, if its diameter in inches is D , is $D\pi$ and $\pi = 3.1416$. Therefore:

$$\text{Number of r.p.m.} = \frac{\text{Number of m.p.h.} \times 1056}{D} = \frac{\text{Number of m.p.h.}}{D} \times 336.134$$

The accompanying table gives the equivalents of m.p.h. in feet per minute, and applies the rules, as given above, to road wheels from 24 to 44 inches and for speeds up to 40 m.p.h.

Miles Per Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	35	40
Feet Per Minute	88	176	264	352	440	528	616	704	792	880	968	1,056	1,144	1,232	1,320	1,408	1,496	1,584	1,672	1,760	1,836	2,112	2,288	2,464	2,640	3,080	3,520
Wheel Diameter in Inches	24.14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280	303	326	354	382	420	480	560
Wheel Diameter in Inches	26.12	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320	340	360	384	408	432	480	560
Wheel Diameter in Inches	30.11	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360	384	408	432	456	480	560	640
Wheel Diameter in Inches	34.10	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	560	640
Wheel Diameter in Inches	38.09	45	67	89	111	133	155	177	199	221	243	265	287	309	331	353	375	397	419	441	463	485	507	529	551	600	680
Wheel Diameter in Inches	42.08	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	475	500	525	550	575	600	625	680	760
Wheel Diameter in Inches	46.07	55	82	110	137	164	191	218	245	272	299	326	353	380	407	434	461	488	515	542	569	596	623	650	677	736	816
Wheel Diameter in Inches	50.06	60	90	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600	630	660	690	720	750	816	912
Wheel Diameter in Inches	54.05	66	99	132	165	198	231	264	297	330	363	396	429	462	495	528	561	594	627	660	693	726	759	792	825	896	1,008
Wheel Diameter in Inches	58.04	70	105	140	175	210	245	280	315	350	385	420	455	490	525	560	595	630	665	700	735	770	805	840	875	944	1,056
Wheel Diameter in Inches	62.03	75	112	150	187	225	262	299	336	373	410	447	484	521	558	595	632	669	706	743	780	817	854	891	928	1,000	1,120
Wheel Diameter in Inches	66.02	80	120	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800	840	880	920	960	1,000	1,072	1,200
Wheel Diameter in Inches	70.01	85	127	168	209	250	291	332	373	414	455	496	537	578	619	660	701	742	783	824	865	906	947	988	1,029	1,104	1,248
Wheel Diameter in Inches	74.00	90	135	176	217	258	299	340	381	422	463	504	545	586	627	668	709	750	791	832	873	914	955	996	1,037	1,112	1,264
Wheel Diameter in Inches	78.00	95	142	184	225	266	307	348	389	430	471	512	553	594	635	676	717	758	799	840	881	922	963	1,004	1,045	1,120	1,280
Wheel Diameter in Inches	82.00	100	150	192	233	274	315	356	397	438	479	520	561	602	643	684	725	766	807	848	889	930	971	1,012	1,053	1,128	1,304
Wheel Diameter in Inches	86.00	105	157	199	240	281	322	363	404	445	486	527	568	609	650	691	732	773	814	855	896	937	978	1,019	1,060	1,136	1,312
Wheel Diameter in Inches	90.00	110	165	207	248	289	330	371	412	453	494	535	576	617	658	699	740	781	822	863	904	945	986	1,027	1,068	1,144	1,320
Wheel Diameter in Inches	94.00	115	172	214	255	296	337	378	419	460	501	542	583	624	665	706	747	788	829	870	911	952	993	1,034	1,075	1,152	1,328
Wheel Diameter in Inches	98.00	120	180	222	263	304	345	386	427	468	509	550	591	632	673	714	755	796	837	878	919	960	1,001	1,042	1,083	1,160	1,336
Wheel Diameter in Inches	102.00	125	187	229	270	311	352	393	434	475	516	557	598	639	680	721	762	803	844	885	926	967	1,008	1,049	1,090	1,168	1,344
Wheel Diameter in Inches	106.00	130	194	236	277	318	359	400	441	482	523	564	605	646	687	728	769	810	851	892	933	974	1,015	1,056	1,097	1,176	1,344
Wheel Diameter in Inches	110.00	135	201	243	284	325	366	407	448	489	530	571	612	653	694	735	776	817	858	899	940	981	1,022	1,063	1,104	1,184	1,352
Wheel Diameter in Inches	114.00	140	208	250	291	332	373	414	455	496	537	578	619	660	701	742	783	824	865	906	947	988	1,029	1,070	1,111	1,192	1,360
Wheel Diameter in Inches	118.00	145	215	257	298	339	380	421	462	503	544	585	626	667	708	749	790	831	872	913	954	995	1,036	1,077	1,118	1,200	1,368
Wheel Diameter in Inches	122.00	150	222	264	305	346	387	428	469	510	551	592	633	674	715	756	797	838	879	920	961	1,002	1,043	1,084	1,125	1,208	1,376
Wheel Diameter in Inches	126.00	155	229	271	312	353	394	435	476	517	558	599	640	681	722	763	804	845	886	927	968	1,009	1,050	1,091	1,132	1,216	1,384
Wheel Diameter in Inches	130.00	160	236	278	319	360	401	442	483	524	565	606	647	688	729	770	811	852	893	934	975	1,016	1,057	1,098	1,139	1,224	1,392
Wheel Diameter in Inches	134.00	165	243	285	326	367	408	449	490	531	572	613	654	695	736	777	818	859	900	941	982	1,023	1,064	1,105	1,146	1,232	1,400
Wheel Diameter in Inches	138.00	170	250	292	333	374	415	456	497	538	579	620	661	702	743	784	825	866	907	948	989	1,030	1,071	1,112	1,153	1,240	1,408
Wheel Diameter in Inches	142.00	175	257	299	340	381	422	463	504	545	586	627	668	709	750	791	832	873	914	955	996	1,037	1,078	1,119	1,160	1,248	1,416
Wheel Diameter in Inches	146.00	180	264	306	347	388	429	470	511	552	593	634	675	716	757	798	839	880	921	962	1,003	1,044	1,085	1,126	1,167	1,256	1,424
Wheel Diameter in Inches	150.00	185	271	313	354	395	436	477	518	559	600	641	682	723	764	805	846	887	928	969	1,010	1,051	1,092	1,133	1,174	1,264	1,432
Wheel Diameter in Inches	154.00	190	278	320	361	402	443	484	525	566	607	648	689	730	771	812	853	894	935	976	1,017	1,058	1,099	1,140	1,181	1,272	1,440
Wheel Diameter in Inches	158.00	195	285	327	368	409	450	491	532	573	614	655	696	737	778	819	860	901	942	983	1,024	1,065	1,106	1,147	1,188	1,280	1,448
Wheel Diameter in Inches	162.00	200	292	334	375	416	457	498	539	580	621	662	703	744	785	826	867	908	949	990	1,031	1,072	1,113	1,154	1,195	1,296	1,464
Wheel Diameter in Inches	166.00	205	300	341	382	423	464	505	546	587	628	669	710	751	792	833	874	915	956	997	1,038	1,079	1,120	1,161	1,202	1,304	1,472
Wheel Diameter in Inches	170.00	210	307	349	390	431	472	513	554	595	636	677	718	759	800	841	882	923	964	1,005	1,046	1,087	1,128	1,169	1,210	1,312	1,480
Wheel Diameter in Inches	174.00	215	314	356	397	438	479	520	561	602	643	684	725	766	807	848	889	930	971	1,012	1,053	1,094	1,135	1,176	1,217	1,320	1,488
Wheel Diameter in Inches	178.00	220	321	363	404	445	486	527	568	609	650	691	732	773	814	855	896	937	978	1,019	1,060	1,101	1,142	1,183	1,224	1,328	1,504
Wheel Diameter in Inches	182.00	225	328	370	411	452	493	534	575	616	657	698	739	780	821	862	903	944	985	1,026	1,067	1,108	1,149	1,190	1,231	1,336	1,512
Wheel Diameter in Inches	186.00	230	335	377	418	459	500	541	582	623	664	705	746	787	828	869	910	951	992	1,033	1,074	1,115	1,156	1,197	1,238	1,344	1,520
Wheel Diameter in Inches	190.00	235	342	384	425	466	507	548	589	630	671	712	753	794	835	876	917	958	999	1,040	1,081	1,122	1,163	1,204	1,245	1,352	1,528
Wheel Diameter in Inches	194.00	240	349	391	432	473	514	555	596	637	678	719	760	801	842	883	924	965	1,006	1,047	1,088	1,129	1,170	1,211	1,252	1,360	1,536
Wheel Diameter in Inches	198.00	245	356	398	439	480	521	562	603	644	685	726	767	808	849	890	931	972	1,013	1,054	1,095	1,136	1,177	1,218	1,259	1,368	1,544
Wheel Diameter in Inches	202.00	250	363	405	446	487	528	569	610	651	692	733	774	815	856	897	938	979	1,020	1,061	1,102	1,143	1,184	1,225	1,266	1,376	1,552
Wheel Diameter in Inches	206.00	255	370	412	453	494	535	576	617	658	699	740	781	822	863	904	945	986	1,027	1,068	1,109	1,150	1,191	1,232	1,273	1,384	1,560
Wheel Diameter in Inches	210.00	260	377	419	460	501	542	583	624	665	706	747	788	829	870	911	952	993									

Car Speed at 1000 R.P.M.

What is speed in m.p.h. at 1000 r.p.m. of engine with road wheels of different sizes? Assumed: the use of direct gear and a $\frac{1}{2}$ bevel-gear ratio; also a speed reduction of 3 per cent due to tire compression and slip.

Answer: If d is wheel diameter in inches (reduced to feet by dividing by 12), one has (since 88 ft. per minute equals 1 m.p.h.):

$$\text{Number of m.p.h.} = \frac{d \times 1000}{3 \times 12 \times 88} = \frac{d \times 3141.6}{3168} = d - 1\% \text{ (approx.)}$$

The m.p.h. thus equal the wheel diameter in inches minus 4 per cent, with the 3 per cent allowance for tire action, and a $\frac{1}{2}$ gear ratio.

Similarly, for a $\frac{1}{4}$ ratio (old type racing car) the m.p.h. equals $3d - 4$ per cent.

From this, the m.p.h. obtained with any other ratio of total reduction is easily found by reducing $3d$ correspondingly and deducting 4 per cent. A $\frac{1}{4}$ ratio (representing low gear, for example) gives $\frac{1}{2}d - 4$ per cent.

For other engine speeds than 1000 r.p.m., increase or reduce in proportion.

The following table shows the approximate speed in m.p.h. for different wheel diameters and gear ratios, at 1000 r.p.m. of engine.

Gears	12:1	9:1	7:1	5:1	4:1	3½:1	3:1	2½:1	2:1	1:1
30-in. wheel.....	7.2	9.6	12.3	17.3	21.6	24.7	28.8	34.6	43.2	86.4
32-in. wheel.....	7.7	10.2	13.2	18.4	23.1	26.4	30.7	36.8	46.1	92.2
33-in. wheel.....	7.9	10.6	13.6	19.0	23.8	27.2	31.7	38.0	47.5	95.0
34-in. wheel.....	8.2	10.9	13.9	19.6	24.5	27.9	32.6	39.2	49	97.9
36-in. wheel.....	8.6	11.5	14.8	20.7	25.9	29.6	34.6	41.4	51.9	103.7
38-in. wheel.....	9.1	12.2	15.6	21.9	27.4	31.2	36.5	43.8	54.7	109.4
40-in. wheel.....	9.6	12.8	16.5	23.0	28.8	32.9	38.4	46.0	57.6	115.2
42-in. wheel.....	10.1	13.4	17.3	24.2	30.3	34.6	40.3	48.4	60.5	121.0
44-in. wheel.....	10.6	14.1	18.1	25.3	31.7	36.2	42.2	50.6	63.4	126.7

Speedometer and Odometer Readings.

Odometers serve mainly the following purposes:

- 1—To ascertain the mileage of tires.
- 2—To keep track of monthly and yearly service of a vehicle.
- 3—To furnish a control upon the daily work of drivers.
- 4—To check illegitimate use of a vehicle.
- 5—To ascertain mileage of a day's journey or a tour.

If driven from a front wheel the odometer will record the slippage as well as the mileage of the front wheel.

If driven from a rear wheel, it will record slippage (spinning) as well as mileage of that wheel.

If driven from a transmission shaft, it will record slipping (spinning) of both rear wheels.

It seems to be the consensus of opinion that these sources of error are negligible so far as any of the purposes above mentioned are concerned.

Error due to insufficient inflation of air tires is also negligible, as either the soft tire maintains contact with the ground along the entire circumference of its tread—the circumference being merely ovalized—or else, in the case of a flat tire whose tread buckles under the driving effort, very little distance is covered under the abnormal condition.

Errors due to roughness of road are found to compensate for themselves, the bounding and the indentations of the tread resulting as often in advancement as in retardation.

The only notable error arises in connection with commercial motor vehicles when the wheel diameter is reduced by the wearing down of solid rubber tires.

Reliable data on speedometer and odometer readings have not yet been systematically gathered.

Air and Wind Pressure

On this subject reliable data are yet to be formulated and established.

When an object is moved in the atmosphere or a current of air strikes an object, a pressure is produced, but the natural laws governing the force and nature of the pressure are as yet understood only in part.

According to previously accepted ideas, which were applied in practice mainly to figure maximum wind pressure upon buildings and bridges, the pressure in pounds, P , against a squarely apposed plane area, S square feet, at a wind velocity of V miles per hour, was expressed in the formula: $P = 0.0025 SV^2$, various investigators having gradually reduced the numerical factor from 0.005, which was first supposed to be correct, to one-half of this value.

In applying this formula to irregular shapes or to plane surfaces held at an angle smaller than 90 deg. to the direction of movement and air resistance, it has been customary to assume that the effective area S is the horizontal projection of the actual area. For example, it has been supposed that a windshield held at an angle of 60 deg. is equivalent, so far as air resistance is concerned, to one standing vertically and reaching to the same height. Its area would be 0.87 of that of the sloping shield, but the reduction of air resistance is much more than 13 per cent.

The principal flaw, both in the basic formula and in the projected-area theory lies in disregarding body shapes and dimensions and assuming that frontal area alone determines air and wind resistance. If the question is one of wind resistance in a motor car, the direction of the wind is an additional factor that baffles calculation and renders any application of previously accepted theories useless.

More modern views originate from experiments with streamline shapes to determine the best shapes for boats. A square or oblong piece of soap that is dragged through water by a string passing through the soap assumes gradually by the wear due to resistance of the water the shape now characterized as "streamline," which is an oval, more elongated and more pointed at the rear the faster the dragging movement has been. This agreed with the requirement of considerable length for fast boats. In airplane experiments it was similarly found that the adoption of streamline sections for construction parts reduced air resistance and the formation of eddies. Air being much lighter and more elastic than water, and having a mobility of a different character, the streamline shapes for aircraft were not in all respects identical with those for boats, but the main principle found to be fully established in both cases was the same, to the effect that the resistance encountered by moving an object against water or air cannot be determined from the areas opposed to the movement and the speed, but undergoes radical changes if the shapes or dimensions of the object are altered without altering the frontal area. And it has been further established that different speeds call for different shapes if the minimum of resistance for a given frontal area shall be realized.

The Eiffel aerodynamical laboratory of Paris, France, gives the following co-efficients for wind pressures against objects of various shapes:

Against flat circular plate	0.0028
flat square plate	0.0030
sphere	0.000445
round side of hollow hemisphere	0.0081
hollow side of hollow hemisphere	0.00384
apex (60 degrees) of cone	0.0013
apex (30 degrees) of cone	0.00085
apex (20 degrees) of cone	
with hemispherical bottom	0.000406
hemispherical bottom of same	0.000222

The pressure upon a rectangular plate is greater than the pressure upon a square or round plate of same area, probably largely because its circumference is greater.

The power required for overcoming wind pressure is: Power = VP , where V is the velocity and P the pressure or resistance. Inserting the value for P , with K denoting the co-efficient, one has

$$\text{Power} = KSV^3$$

This means that the resistance or pressure must be overcome at the rate at which it is created, and the formula could be quite correct if it were certain that the formula for pressure or resistance ($P = KSV^2$) were reliable. V^3 is in reality found to be too high for low velocities and too low for high velocities. Many find it difficult to perceive that the power should be according to the cube of the velocity. It helps the understanding, however, to note that the pressure of KSV^2 cannot be reached before the power has reached the value of KSV^3 in producing it.

(Continued on page 1092)

According to measurements by the United States Signal Service at Mount Washington, N. H., the wind pressure against a vertical plane with nothing behind it is as follows, in pounds per square foot:

Miles Per Hour	Pressure	Miles Per Hour	Pressure
10	0.4	50	10.0
20	1.6	60	14.4
30	3.6	80	25.6
40	6.4	100	40.0

and upon a cylindrical surface the pressure is one-half of these figures for the same frontal area, but this is subject to variation according to whether there is a cylindrical, a flat or a hollow surface at the back of the cylindrical surface turned against the wind.

Features in which automobile design is affected by the greater or lesser knowledge at disposal with reference to pressures and movements of the atmosphere are as follows:

Shapes of vehicles (front, rear, top, bottom and wheels) producing a minimum of air resistance for fast driving or driving against a high wind.

The position and area of windshields and headlights.

The air channels in radiators.

The regulation of air passage under the hood, especially at the carbureter intakes.

Design and timing of intake and exhaust valves.

The ventilating fan and its position.

The carbureter and manifold channels.

The exhaust pipe and the muffler, where sounds as well as resistances are affected.

Provisions for reducing the dust nuisance through vehicle design causing least atmospheric disturbance and eddies along the road surface.

Provisions for making road grit and dust strike the vehicle body and its occupants in as small a measure as possible.

The design of dynamometers intended to measure power by air resistance against the movement of rotated blades.

At all these points the designer's understanding of the air pressures and movements involved is following far behind actual construction based on experience, or is deliberately subordinated, as being unsafe, to conventional design.

Hill Climbing Formulas

Contests for ascertaining the different capacities of different cars for ascending long and steep hills at a maximum of speed are no longer of interest as a means for determining what power, weight and gear proportions should be incorporated in a motor vehicle or for spreading information among the public with regard to car requirements or car merits. By reason of the increased power and reliability of modern engines, the result of an ordinary hill-climbing contest is now dominated by the proportion between power and weight. Long and steep hills can be ascended by almost any motor vehicle at a rate of speed which is higher than desirable, considering the wear and tear of tires. The importance of certain relations between gear speed ratio and the useful range of engine speed, which was very pronounced in the days of small and uncertain engine power, is much reduced, yet these relations are still decisive for getting the best hill-climbing ability from a given proportion of power and weight.

The influence of gear ratio and useful engine speed has not so far been expressed in a formula, however, while old so-called hill-climbing formulas have been discarded as worthless for practical purposes, their place being taken largely by rules for car performance tests, as formulated or projected by the Society of Automotive Engineers (S. A. E. Bulletin, May, 1917, p. 141 to 155) and similar organizations in foreign countries.

If a car has four gear speeds proportioned as 1, 1.6, 2.6 and 4.2 and the useful engine speed ranges from 1200 to 1800 revolutions per minute, the vehicle speed on one of the gears at 1200 r.p.m. remains a little higher than it can be at 1800 r.p.m. on the next lower gear, which is 1.6 times slower, as $1200 \times 1.6 = 1920$. Such a car can drop to the next lower gear on any hill without losing much speed. If the ratio from gear to gear is 1.5, all the loss will be that due to the time required for acceleration and the lesser efficiency of the lower gear. With a ratio of 1.4, making the progression 1, 1.4, 1.96 and 2.75, these factors would be taken care of, and any hill could be ascended at the top speed possible with the power available.

Supposing the car has only three gearspeeds, 1, 2.4 and 5.76, the intermediate ratio being 2.4, then a grade of the hill rendering a lower gear necessary results in a loss of vehicle speed, as the engine speed can be raised only from 1200 to 1800, in the proportion of 1.5 to 1, while the gearspeed drops as from 2.4 to 1. With such a gear equipment the hill-climbing ability therefore depends on the grades of the hill. In competition with a car of equal power and weight having a 1.6 second gear, it will lose, if the hill is such as to make the 1.6 gear sufficiently powerful, but it will win if the grade is steep enough to compel the use of the 2.6 gear on the other car. (Continued on page 1093)

Hill-climbing contests are therefore either a gamble on the suitability of certain gear ratios for certain hills, or else demonstrations of the self-evident fact that the principal requirement is high power per weight unit.

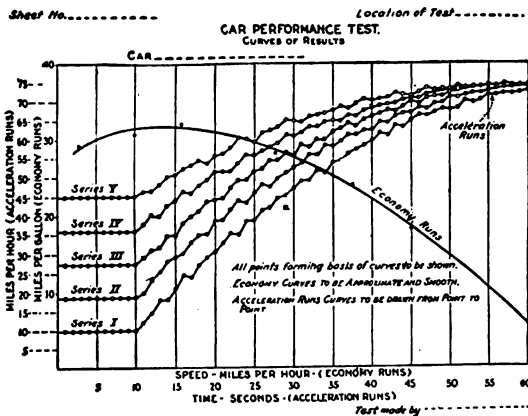
The torque curve of the engine would be a factor of more than minor importance if it were not considered beforehand in determining the "useful range of engine speed".

Hill-climbing tests are now resorted to mainly for determining the properties of one fuel in comparison with those of another fuel, the contesting cars being alike; or one carbureter against another; one kind of tires against another.

Complete Car Performance Tests

Tests relating to all the principal operative properties of a car are recommended by the Research Division of the Society of Automotive Engineers. The complete test includes a series of runs at various specified speeds from the minimum to the maximum speed of the car in order to determine fuel consumption and five series of acceleration runs, starting at various specified speeds from the minimum speed of the car on high gear to about 30 miles per hour. In each run the acceleration period allowed is 50 seconds.

To produce uniform conditions as a basis for comparisons, the recommendations include description and illustrations of the apparatus used, and detailed directions for conducting the runs, weighing the fuel, measuring the acceleration, and computing and recording the results. Forms also are provided for recording the specifications of the car and other pertinent data, for recording the observations and for plotting the results.



For the fuel economy runs, the amount of fuel used is determined by weighing in special tanks, and the distance covered is regulated by using measured courses of prescribing length and character. For the acceleration runs a recording instrument has been designed to produce on a continuous strip of moving paper parallel records of seconds and of distance. The seconds record is obtained from an electric chronometer, and the distance record by an electric spark puncturing the paper once for each one-fifth of a revolution of a front wheel of the car.

The results of the whole test are plotted on one chart in the form of curves as roughly indicated in the sketch herewith.

Thermometer Scales

FAHRENHEIT CENTIGRADE REAUMUR			FAHRENHEIT CENTIGRADE REAUMUR			FAHRENHEIT CENTIGRADE		
95		35	28	230	110	88		
90	32.2						2100	1148.9
	86	-30	24	221	-105	84	2000	1093.3
80	26.6						1900	1037.8
	77	-25	20	212	100	80	1800	982.2
70	21.1						1700	928.7
	68	-20	16				1600	871.1
60	15.5	15	12				1500	815.5
	59	-15		194	-90	72	1400	760
50	50	-10	8				1300	704.0
				185	-85	68	1200	648.9
40	41	-5	4				1100	593.3
	4.4			176	-80	64	1000	537.8
30	32	0	0	167	-75	60	900	482.2
	-1.1						800	426.7
20	23	-5	-4	153	-70	55	700	371.1
	-6.7						600	315.5
10	14	-10	-8	149	-65	52	500	260
	-12.2						400	204.4
Zero	5	-15	-12	140	-60	48	300	148.9
	-17.78			131	-55	44	230	
-10	-4	-20	-16					
	-23.3			122	-50	40		
-20	-13	-25	-20					
	-28.9			113	-45	36		
-30	-22	-30	-24					
	-34.4			104	-40	32		
-40	-31	-35	-28					
	-40	-40	-32	95	-35	28		

2100	1148.9	1100
2000	1093.3	
1900	1037.8	1000
1800	982.2	
1700	928.7	900
1600	871.1	
1500	815.5	800
1400	760	
1300	704.0	700
1200	648.9	
1100	593.3	600
1000	537.8	
900	482.2	500
800	426.7	
700	371.1	400
600	315.5	
500	260	300
400	204.4	
300	148.9	200
230		110

METAL WORKING and HEAT-TREATMENT TEMPERATURES in FAHR. and CENTIG. SCALES

Fahrenheit:- $F = \frac{9}{5}C + 32$; also: $F = \frac{9}{4}R + 32$
 Centigrade:- $C = \frac{5}{9}(F - 32)$ or $\frac{5}{9}F - 17.78$; also: $C = \frac{5}{4}R$
 Réaumur:- $R = \frac{4}{9}(F - 32)$ or $\frac{4}{9}F - 14.22$; also: $R = \frac{4}{5}C$

For "Boiling Point of Water at Various Altitudes" see page 1147.

(Continued on page 1095)

Index to Tables and Data Appears on Pages 1079 and 1080

Thermometer Scales—Continued

In order to convert degrees Fahrenheit (F.) into degrees Centigrade (C.), subtract 32, multiply the remainder by 5 and divide by 9. To turn Centigrade into Fahrenheit, multiply the number of deg. C. by 9, divide by 5 and add 32.

The Réaumur scale is still largely used in France. Five degrees C. equal 4 degrees R.

These relations are expressed in the formulas at the foot of the appended scales. They also indicate another mode of converting F. into C.; namely, multiply F. by $\frac{5}{9}$ and deduct 17.78, the latter figure representing $32 \times \frac{5}{9}$ or the number of degrees C. that the F. zero is lower than the C. zero. This mode of figuring has the advantage that it is not necessary to remember, or reason out, whether 32 is to be subtracted first or last. In converting from one scale to another, numerical values are taken as negative below the zero of each scale.

Baume Hydrometer and Specific Gravity Equivalents

For liquids heavier than water (such as electrolytes of storage batteries, electro-plating baths etc.), at 60° F.

$$\text{Specific gravity} = \frac{145}{145 - ^\circ\text{Bé}} \quad \text{and} \quad \text{Baumé} = 145 - \frac{145}{\text{Sp. Gr.}}$$

Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity
0	1.000	10	1.074	20	1.160	30	1.260	40	1.381
1	1.006	11	1.082	21	1.169	31	1.271	45	1.450
2	1.014	12	1.090	22	1.178	32	1.283	50	1.526
3	1.021	13	1.098	23	1.188	33	1.294	55	1.611
4	1.028	14	1.106	24	1.198	34	1.306	60	1.705
5	1.035	15	1.115	25	1.208	35	1.318	65	1.812
6	1.043	16	1.124	26	1.218	36	1.330	70	1.933
7	1.050	17	1.132	27	1.228	37	1.342	....	....
8	1.058	18	1.141	28	1.239	38	1.355	....	....
9	1.066	19	1.150	29	1.250	39	1.367	....	....

For liquids lighter than water (gasoline and other engine fuels), the Baumé scale is based on the formula:

$$\text{Specific gravity (at 60° F.)} = \frac{140}{130 + \text{Bé}} \quad \text{or} \quad \text{Baumé} = \frac{140}{\text{Sp. Gr.}} - 130$$

The scale is as follows

Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.
10	1.0000	8.33	31	0.8695	7.25	52	0.7692	6.42	73	0.6896	5.77
11	0.9929	8.27	32	0.8641	7.21	53	0.7650	6.39	74	0.6863	5.74
12	0.9859	8.21	33	0.8588	7.16	54	0.7608	6.36	75	0.6829	5.71
13	0.9790	8.16	34	0.8536	7.12	55	0.7567	6.32	76	0.6796	5.68
14	0.9722	8.10	35	0.8484	7.07	56	0.7526	6.29	77	0.6763	5.65
15	0.9655	8.05	36	0.8433	7.03	57	0.7486	6.26	78	0.6730	5.63
16	0.9589	7.99	37	0.8383	6.99	58	0.7446	6.22	79	0.6698	5.60
17	0.9523	7.94	38	0.8333	6.95	59	0.7407	6.19	80	0.6666	5.57
18	0.9459	7.88	39	0.8284	6.91	60	0.7368	6.16	81	0.6635	5.55
19	0.9395	7.83	40	0.8235	6.87	61	0.7329	6.13	82	0.6604	5.51
20	0.9333	7.78	41	0.8187	6.83	62	0.7290	6.10	83	0.6573	5.48
21	0.9271	7.73	42	0.8139	6.80	63	0.7253	6.07	84	0.6542	5.45
22	0.9210	7.68	43	0.8092	6.76	64	0.7216	6.03	85	0.6511	5.42
23	0.9150	7.63	44	0.8045	6.72	65	0.7179	6.00	86	0.6481	5.40
24	0.9090	7.58	45	0.8000	6.68	66	0.7142	5.97	87	0.6451	5.38
25	0.9032	7.54	46	0.7954	6.64	67	0.7106	5.94	88	0.6422	5.36
26	0.8974	7.49	47	0.7909	6.60	68	0.7070	5.91	89	0.6392	5.33
27	0.8917	7.44	48	0.7865	6.57	69	0.7035	5.88	90	0.6363	5.30
28	0.8860	7.39	49	0.7821	6.53	70	0.7000	5.85	....	....	....
29	0.8805	7.34	50	0.7777	6.49	71	0.6965	5.82	....	....	....
30	0.8750	7.29	51	0.7734	6.46	72	0.6930	5.79	....	....	....

Anti-Freezing Mixtures

The percentage of alcohol, by volume, to give a certain freezing point can be obtained from the table below:

Freezing Point, Degrees Fahrenheit	DENATURED		WOOD	
	Alcohol, per Cent.	Water, per Cent.	Alcohol, per Cent.	Water, per Cent.
+10	28	72	17	83
0	40	60	24	76
-10	52	48	31	69
-20	63	37	38	62

So little water is lost by evaporation that it is only necessary to add alcohol to the system from time to time, to replace that which is used up.

The proportions of glycerine and water may be obtained from the table:

Freezing Point	Glycerine	Water
+28 degrees Fahrenheit	10 per cent.	90 per cent.
+15 degrees Fahrenheit	30 per cent.	70 per cent.
+ 5 degrees Fahrenheit	40 per cent.	50 per cent.
0 degrees Fahrenheit	48 per cent.	52 per cent.
- 5 degrees Fahrenheit	54 per cent.	46 per cent.
-10 degrees Fahrenheit	58 per cent.	42 per cent.

The difficulties in the way of using glycerine and water alone have led to the use of a mixture containing alcohol in addition. The alcohol and glycerine are generally added in equal parts to the water, the amount depending upon the freezing point desired. The percentage of mixture to add may be obtained from the accompanying table:

Freezing Point	Mixture Glycerine and Alcohol	Water
+20 degrees Fahrenheit	15 per cent.	85 per cent.
+15 degrees Fahrenheit	20 per cent.	80 per cent.
+10 degrees Fahrenheit	24 per cent.	76 per cent.
+ 5 degrees Fahrenheit	27 per cent.	73 per cent.
0 degrees Fahrenheit	29 per cent.	71 per cent.
- 5 degrees Fahrenheit	30 per cent.	70 per cent.
-15 degrees Fahrenheit	32 per cent.	68 per cent.

Calcium chloride in water is another solution that has been used with success. When purchasing calcium chloride it is very important to ask for the chemically pure salt as the commercial variety contains free acid which reacts on the metal parts of the cooling system. If it is impossible to obtain the former, the latter may be made fit for use by neutralizing the acid. To do this add ammonia or soda ash gradually to the calcium chloride solution until blue litmus paper no longer turns pink when moistened with the solution. The amount of calcium chloride to use may be found from the table:

Pounds of Calcium Chloride per Gallon	Freezing Point, Degrees Fahrenheit
2	+18.0
3	+ 1.5
4	-17.0
5	-39.0

Measurement of Grades

The base of the triangle represents a line 100 feet long and the sloping lines different road grades. The first grade has a rise of 5 feet and is designated as a 5 per cent grade or a 1 in 20 grade. The distance from which the percentage is figured is not that actually traveled by a car in ascending such a slope but is the length of the base line of the slope. This system of measuring a grade (by the tangent of the angle of inclination and not by its sine) has come from the surveyor's practice of measuring grades on maps that show base lines and altitudes but not the actual length or angle of an incline.

A grade of 100 percent, under this accepted system, corresponds to an angle of 45 degrees, and not to 90 degrees as commonly supposed.

At the upper end of the second sloping line the elevation amounts to 6½ feet from a 100-foot base, and the grade is a 6½ per cent or 1 in 15 grade. Similarly, a 1 in 3 grade is the same as a 33½ per cent grade, a 1 in 2 grade the same as a 50 per cent grade.

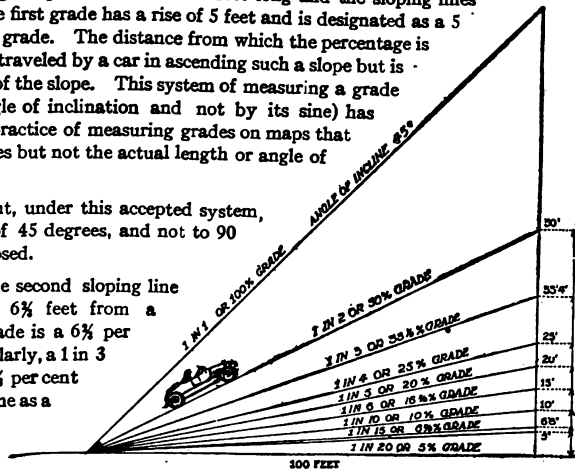


Table of Gradients

Slope	Percent Grade	Equal to Angle of	Rise or Fall in One Mile, Feet
1 in 5	20	11° 19'	1056
1 " 6	16.67	9° 26'	880
1 " 7	14.3	8° 09'	755
1 " 8	12.5	7° 08'	660
1 " 9	11.1	6° 17'	586
1 " 10	10	5° 43'	528
1 " 11	9.1	5° 11'	480
1 " 12	8.33	4° 46'	440
1 " 13	7.7	4° 24'	407
1 " 14	7.14	4° 05'	377
1 " 15	6.67	3° 49'	352
1 " 16	6.25	3° 35'	330
1 " 17	5.9	3° 22'	312
1 " 18	5.55	3° 11'	287
1 " 19	5.26	3° 00'	278
1 " 20	5	2° 52'	264
1 " 25	4	2° 18'	211
1 " 30	3.33	1° 55'	176
1 " 35	2.86	1° 38'	151
1 " 40	2.5	1° 26'	132

(Continued on following page)

Table of Grades and Corresponding Angles of Inclines.

(Grade Percent Equals Numerical Value of Tangents of Angle with Radius 100)

Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent
¼	0.87	12½	22.17	24½	45.57
1	1.74	13	23.09	25	46.63
1½	2.62	13½	24.01	25½	47.70
2	3.49	14	24.93	26	48.77
2½	4.37	14½	25.86	26½	49.86
3	5.24	15	26.80	27	50.95
3½	6.12	15½	27.73	27½	52.06
4	7.00	16	28.68	28	53.17
4½	7.87	16½	29.62	28½	54.30
5	8.75	17	30.57	29	55.43
5½	9.63	17½	31.53	29½	56.58
6	10.51	18	32.49	30	57.74
6½	11.39	18½	33.46	30½	58.91
7	12.28	19	34.43	31	60.09
7½	13.17	19½	35.41	31½	61.28
8	14.05	20	36.40	32	62.49
8½	14.95	20½	37.39	32½	63.71
9	15.84	21	38.39	33	64.94
9½	16.73	21½	39.39	33½	66.19
10	17.63	22	40.40	34	67.45
10½	18.53	22½	41.42	34½	68.73
11	19.44	23	42.45	35	70.02
11½	20.35	23½	43.48	35½	71.33
12	21.26	24	44.52	36	72.65

Carrying Capacities and Inflation Pressures of Pneumatic Tires

S. A. E. Standard

Nom- inal Tire Size	Fabric Tires for Passenger Cars		Cord Tires for Passenger Cars		Cord Tires for Motor Trucks	
	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.
3	375	45	400	40	.....	.....
3½	570	55	600	50	.....	.....
4	815	65	850	60	850	70
4½	1100	75	1200	70	1200	75
5	1500	85	1700	80	1700	80
6	.....	.....	.....	.....	2200	90
7	.....	.....	.....	.....	3000	100
8	.....	.....	.....	.....	4000	110

Types and Dimensions for Pneumatic Tires and Rims

(S. A. E. Standard as revised August, 1919)

Pneumatic Tires and Rims

S. A. E. Standard

Pneumatic tires for passenger cars and motor trucks shall be of the straight-side type in all sizes except the 30 by 3½-in. regular and 31 by 4-in. oversize, where only regular clincher type shall be used.

Nominal Tire and Rim Size		Oversize Tire Size		Tire-Seat Diam. (Rim)		Tire Seat Circum. (Rim) In. ± 0.046
In.	Mm.	In.	Mm.	In.	Mm.	
30x3½	90/585	31x4	105/585	23	585	72.257
32x3½	90/635	33x4	105/635	25	635	78.540
32x4	105/610	33x4½	120/610	24	610	75.398
33x4	105/635	34x4½	120/635	25	635	78.540
32x4½	120/585	33x5	135/585	23	585	72.257
33x4½	120/610	34x5	135/610	24	610	75.398
34x4½	120/635	35x5	135/635	25	635	78.540
34x5	135/610	36x6	150/610	24	610	75.398
36x6	150/610	38x7	175/610	24	610	75.398
38x7	175/610	40x8	200/610	24	610	75.398
40x8	200/610	42x9	225/610	24	610	75.398
44x10	250/610	.....	.....	24	610	75.398

Deflection and Set Test for Pneumatic Tire Rims

S. A. E. Standard

Deflection measurements for either clincher or straight-side rims shall be made across the extreme rim width. Water pressure shall be used.

The deflection shall be measured from a fixed inflation load of 25 lb. per sq. in. for 3½, 4 and 4½ in. sections, and 50 lb. per sq. in. for 5-in. and larger sections up to the predetermined maximum pressures.

In conducting the tests, measurements of the deflection shall be made after load increments of 25 or 50 lb. as above are added and at a corresponding set the load shall be released.

(Continued on following page)

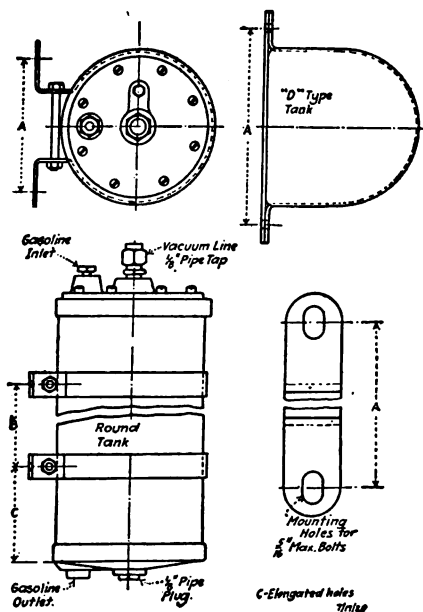
Index to Tables and Data Appears on Pages 1079 and 1080

Deflection and Set Test (Concluded)

Test Pressures and Deflections

Rim Size Nominal, In.	Maximum Pressure Lb. Per Sq. In.	Maximum Deflection, In.	Total Permanent Set, In.
3½	140	0.06	0.02
4	160	0.07	0.03
4½	180	0.10	0.06
5	190	0.12	0.06
6	200	0.15	0.06
7	225	0.15	0.06
8	250	0.15	0.06
10	250	0.15	0.06

Fuel Vacuum Tank Mountings S. A. E. Standard



Tank Diam., In.	Inlet*	Outlet*	A	B	C
3¾ and 4½	⅜	⅜	4	4	2½
6	⅜	¼	4	4	2½
"D" type	¼	¼	7¼	4	2½

* Pipe-line connections and plugs are American standard taper pipe threads.
All dimensions are in inches.

Index to Tables and Data Appears on Pages 1079 and 1080

Tire Loads and Inflation Pressures

RECOMMENDED BY DIFFERENT TIRE MANUFACTURERS

Several tire manufacturers refrain from giving directions. Others recommend the S. A. E. schedule. Varying recommendations are given in the following, slightly abbreviated:

Continental Rubber Works: Twenty pounds pressure per inch of tire cross-section. No load rule.

Quaker: Same.

National Rubber Co.: Same inflation (20 pounds per inch). Load rule for car "without passengers":

Cross section.....	3	3½	4	4½	5		
Diameter.....	28 to 30	30 to 34	31 to 36	34 to 36	35 to 37		
Wheel load.....	350	450 to 600	600 to 750	900 to 950	1000 to 1100		

Portage Rubber Co.: Same inflation (20 pounds per inch). Load rule, for "gross weights." Distinguishes between front and rear tires:

Cross section.....	3	3½	4	4½	5		
Diameter.....	28 to 32	30 to 36	30 to 40	32 to 42	35 to 38		
Rear wheel load.....	350 to 375	450 to 600	625 to 850	750 to 1200	1000 to 1200		
Front wheel load.....	425 to 450	550 to 700	750 to 1000	950 to 1450	1250 to 1450		

Hood: Inflation about 18 pounds per inch. Recommends rear tires stronger than front tires. Scale as follows:

Cross section.....	3	3½	4	4½	5	5½	
Diameter.....	28 to 34	30 to 34	31 to 37	32 to 37	35 to 37	37 to 38	
Inflation.....	55	65	70	80	90	100	
Wheel load.....	300 to 400	400 to 475	675 to 825	850 to 975	1050 to 1100	1275 to 1300	

Mason: Loads are per "gross weights." Odd sizes intended as oversize tires for smaller rims have relatively reduced loads.

Cross section.....	3	3½	4	4½	5	5½	6
Diameter.....	28 to 32	29 to 34	30 to 37	32 to 41	34 to 43	36 to 38	39
Inflation.....	60	70	80	90	90	100	100
Rear wheel load.....	350 to 375	400 to 600	600 to 750	725 to 1125	1000 to 1450	1200 to 1400	1600
Front wheel load.....	425 to 450	475 to 700	730 to 900	875 to 1375	1250 to 1700	1500 to 1600	1750

Century-Plainfield tires follow practically the same schedule.

Acme: Loads are for "gross weights." Inflation uniformly 20 pounds per inch.

Cross section.....	3	3½	4	4½	5	5½	
Diameter.....	28 to 32	28 to 36	30 to 36	32 to 38	35 to 43	36 to 38	
Inflation.....	60	70	80	90	100	110	
Rear wheel load.....	350 to 375	425 to 600	625 to 750	750 to 1050	1000 to 1450	1300 to 1400	
Front wheel load.....	425 to 450	500 to 700	750 to 900	950 to 1300	1250 to 1650	1550 to 1650	

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Pisk Rubber Co. gives a scale which in practice varies little from the proposed S. A. E Standard, with inflation pressures close to 15 pounds per inch of cross-section, as follows:

Tire Sizes	Maximum weight per wheel with load (including passengers) for sizes specified (Weight includes 150 lbs. for each passenger and 100 lbs. for extra equipment.)													
	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200
3 × 28-34	60	65												
3½ × 30-32 34-36		60	65	70	75									
4 × 32-36 38-42				65	70	75	80							
4½ × 34-36 38-42					65	70	75	80	85					
5 × 36 38-40									75	80	85			
5½ × 38-40												85	90	
6 × 40													85	95

Miller Rubber Co. presents a sliding scale of loads and inflation pressures for each tire size, as follows:

Size	Weight Carried	Air Pressure
28 × 3	250 lbs.— 400 lbs.	35 lbs.— 50 lbs.
30 × 3	300 " — 500 "	35 " — 55 "
30 × 3½	400 " — 650 "	45 " — 65 "
31 × 3½	300 " — 650 "	40 " — 65 "
32 × 3½	500 " — 700 "	50 " — 65 "
31 × 4	500 " — 800 "	45 " — 65 "
32 × 4	600 " — 850 "	50 " — 70 "
33 × 4	650 " — 850 "	55 " — 75 "
34 × 4	700 " — 950 "	55 " — 80 "
36 × 4	700 " — 950 "	55 " — 80 "
34 × 4½	800 " — 1000 "	50 " — 80 "
35 × 4½	800 " — 1000 "	50 " — 80 "
36 × 4½	900 " — 1200 "	55 " — 85 "
37 × 4½	900 " — 1300 "	60 " — 85 "
35 × 5	900 " — 1350 "	60 " — 90 "
36 × 5	1000 " — 1450 "	65 " — 90 "
37 × 5	1050 " — 1600 "	65 " — 90 "
38 × 5½	1100 " — 1900 "	65 " — 100 "

Michelin prescribes finding front and rear axle loads with all seats occupied and gasoline and water tanks filled. Apart from oversize tires, the following scale is then recommended (ignoring diameters):

Axle Loads, Lbs.	Tire Sizes	Inflation Pressure, Lbs.
600 to 800	3	45
800 to 1000	3	50
600 to 1000	3½	50
1000 to 1400	3½	60
1400 to 1800	3½	70
1200 to 1600	4	50
1600 to 2000	4	60
2000 to 2400	4	70
1600 to 2000	4½	55
2000 to 2400	4½	65
2400 to 2800	4½	75
2200 to 2600	5	55
2600 to 3000	5	65
3000 to 3400	5	75

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Republic Rubber Co. presents another elaborate scale as follows:

Inflation Pressure	Weights per wheel that may be carried under each tire section diameter						
	3"	3½"	4"	4½"	5"	5½"	6"
30	240						
35	280						
40	325	400	485				
45	365	450	545	660			
50	405	505	610	735	860		1125
55	450	555	675	810	945	1085	1240
60	490	605	735	885	1035	1185	1355
65		660	800	960	1120	1285	1465
70		710	860	1035	1210	1385	1580
75			925	1110	1295	1485	1700
80			985	1185	1385	1585	1910
85				1260	1470	1685	1925
90				1335	1555	1785	2035
95					1645	1885	2150
100						1985	2265

and adds the following directions:

"Pressure varies according to amount of load carried. Weigh separately front and rear of fully loaded car, and divide each weight by two, this will give the weight on each wheel. The tire should be inflated to the pressure given in the extreme left hand column that most nearly corresponds to the load weight under sectional diameter of tire used.

"Heavy-faced type in each column shows the ideal load for rear wheels. A heavier load, as figures under each sectional diameter indicate, may be carried, but owing to the added air pressure necessary to get good tire mileage, it is not desirable. Loads should not exceed the maximum figures at the bottom of each column."

Goodyear Tire & Rubber Co. presents a scale identical with the preceding one, excepting that the prescribed loads are 10 to 15 pounds higher, and that 10 per cent lower inflation pressures are recommended for cord tires.

For *United States* tires a uniform scale of 20 pounds of inflation pressure per inch of tire section is recommended (including 120 pounds pressure for 6-inch tires) in conjunction with a load scale, about which it is said: "The following is a list of the weights which tires of the different sizes are designed to carry, sufficient allowance being made for the usual number of passengers (cars to be weighed without passengers or luggage)":

Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.	Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.	Tire Dimensions	Rear Weight per Wheel, Lbs.	Front Weight per Wheel, Lbs.
28 × 3	350	425	34 × 4	700	875	34 × 5	950	1200
30 × 3	375	450	35 × 4	735	885	35 × 5	1000	1250
32 × 3	375	450	36 × 4	750	900	36 × 5	1050	1300
			37 × 4	800	925	37 × 5	1100	1350
28 × 3½	425	500	40 × 4	850	1000	39 × 5	1200	1450
29 × 3½	425	500	42 × 4	900	1050	43 × 5	1400	1550
30 × 3½	450	550						
31 × 3½	475	575						
32 × 3½	500	600	32 × 4½	750	950	34 × 5½	1000	1250
33 × 3½	525	625	33 × 4½	800	1000	35 × 5½	1050	1300
34 × 3½	550	650	34 × 4½	900	1125	36 × 5½	1100	1350
36 × 3½	600	700	35 × 4½	935	1175	37 × 5½	1150	1400
			36 × 4½	975	1225	38 × 5½	1200	1450
30 × 4	625	750	37 × 4½	1010	1260			
31 × 4	635	775	38 × 4½	1050	1300			
32 × 4	650	800	40 × 4½	1100	1350	37 × 6	1600	1750
33 × 4	675	850	42 × 4½	1200	1450	39 × 6	1800	2000

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

For *Kelly-Springfield* tires the following list is given, the weights to be understood as "gross weights per wheel (car empty)":

Size	Inflation Pressure, Lbs.	Rear Weight, Lbs.	Front Weight, Lbs.	Size	Inflation Pressure, Lbs.	Rear Weight, Lbs.	Front Weight, Lbs.
28 x 3	60	350	450	32 x 4 1/2	85	800	975
30 x 3	60	375	475	33 x 4 1/2	85	850	1050
32 x 3	60	375	475	34 x 4 1/2	85	900	1125
				35 x 4 1/2	85	950	1150
30 x 3 1/2	65	475	575	36 x 4 1/2	85	1000	1225
31 x 3 1/2	65	500	600	37 x 4 1/2	85	1050	1250
32 x 3 1/2	65	525	625	38 x 4 1/2	85	1100	1300
33 x 3 1/2	65	550	650	40 x 4 1/2	85	1125	1375
34 x 3 1/2	65	575	675	42 x 4 1/2	85	1250	1450
36 x 3 1/2	65	600	700				
30 x 4	75	550	700	34 x 5	90	1000	1250
31 x 4	75	575	725	35 x 5	90	1050	1300
32 x 4	75	600	750	36 x 5	90	1100	1350
33 x 4	75	625	775	37 x 5	90	1150	1400
34 x 4	75	650	800	39 x 5	90	1250	1500
35 x 4	75	675	825				
36 x 4	75	700	850	36 x 5 1/2	100	1275	1500
37 x 4	75	725	875	37 x 5 1/2	100	1300	1550
40 x 4	75	800	950	38 x 5 1/2	100	1350	1600
				39 x 6	100	1600	1750

In addition, millimeter sizes and interchangeable sizes are listed.

For *Goodrich* tires no scale of inflation pressures or maximum loads is offered. The use of an instrument called the Goodrich Tire Caliper-Gauge is recommended as more satisfactory, in the following words:

"A tire must be inflated for the load which it actually carries; an arbitrary inflation schedule of 18 or 20 pounds pressure per cross sectional inch is fallacious. Obviously it is foolish to use the same pressure for a four-inch tire carrying 400 lbs. weight on a roadster as that in a four-inch tire carrying 750 lbs. weight on a touring car.

"The Goodrich Tire Caliper-Gauge measures the flattening or deflection of the tire at the point where it touches the ground. If the deflection is so great that the tire will be injured when running, the Caliper-Gauge indicates that fact exactly. It is the only scientific way of procuring inflation for the load which the tire actually carries."

The *Firestone* Tire and Rubber Co. recommends for front wheels 15 to 18 pounds of inflation per inch of tire section and for rear wheels 15 to 20 pounds. The loads ("per wheel, car empty") are given in the following scale with the reminder: "These weights are influenced by extra passengers, luggage, power and speed of the car and the construction as before mentioned, therefore in some instances it will be necessary to equip with larger tires. Refer to *Oversize Tires*."

Size	Rear, Lbs.	Front, Lbs.	Size	Rear, Lbs.	Front, Lbs.	Size	Rear, Lbs.	Front, Lbs.
28 x 3	350	450	34 x 4	650	800	33 x 5	950	1200
30 x 3	375	475	35 x 4	675	825	34 x 5	1000	1250
32 x 3	375	475	36 x 4	700	850	35 x 5	1050	1300
34 x 3	400	500	37 x 4	725	875	36 x 5	1100	1350
36 x 3	425	525	38 x 4	750	900	37 x 5	1150	1400
			40 x 4	800	950	38 x 5	1200	1450
29 x 3 1/2	450	550	42 x 4	850	1000	39 x 5	1250	1500
30 x 3 1/2	475	575				41 x 5	1350	1600
31 x 3 1/2	500	600				43 x 5	1450	1700
32 x 3 1/2	525	625	32 x 4 1/2	800	1000			
33 x 3 1/2	550	650	33 x 4 1/2	850	1050	36 x 5 1/2	1250	1500
34 x 3 1/2	575	675	34 x 4 1/2	900	1100	37 x 5 1/2	1300	1550
36 x 3 1/2	625	700	35 x 4 1/2	950	1150	38 x 5 1/2	1350	1600
			36 x 4 1/2	1000	1200	40 x 5 1/2	1450	1700
30 x 4	550	700	37 x 4 1/2	1050	1250			
31 x 4	575	725	38 x 4 1/2	1100	1300	37 x 6	1350	1600
32 x 4	600	750	40 x 4 1/2	1200	1400	39 x 6	1450	1700
33 x 4	625	775	42 x 4 1/2	1300	1500	41 x 6	1550	1800

Index to Tables and Data Appears on Pages 1079 and 1080

Standardized Dimensions for Solid Tires

(S. A. E. Standard as revised by the Truck Standards Division March 1916 and by the Tire and Rim Division March, 1920.)

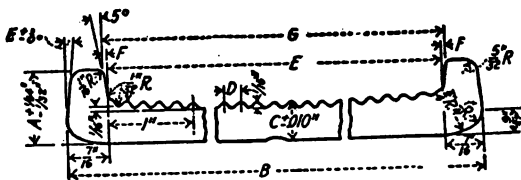
The standard nominal solid tire diameters are 34, 36 and 40 in.

Diameters and Wheel Circumferences

NOMINAL OUTER DIAMETER OF TIRES		ACTUAL DIAMETER OVER STEEL BAND		ACTUAL CIRCUMFERENCE OVER STEEL BAND	
in.	mm	in.	mm	in.	mm
34	860	28	711.2	87 $\frac{13}{32}$	2234.3
36	910	30	762.0	94 $\frac{1}{4}$	2393.9
40	1010	34	863.6	106 $\frac{13}{16}$	2713.1

Solid Tire Base Bands

(S. A. E. Standard as revised by the Tire and Rim Division August, 1919)



Base Band Size	A	B	Tolerances of B	C	Corrugations*		E	G	F
					No.	D			
3	2 $\frac{29}{32}$	3 $\frac{3}{4}$	$\pm \frac{1}{32}$	$\frac{5}{16}$	16	0.181	22 $\frac{29}{32}$	3 $\frac{1}{16}$	$\frac{9}{64}$
3 $\frac{1}{2}$ †	$\frac{9}{4}$	4 $\frac{1}{4}$	$\pm \frac{1}{32}$	1 $\frac{1}{32}$	18	0.191	3 $\frac{7}{16}$	3 $\frac{1}{16}$	$\frac{1}{16}$
4	2 $\frac{29}{32}$	4 $\frac{13}{16}$	$\pm \frac{1}{32}$	$\frac{9}{16}$	20	0.196	3 $\frac{59}{64}$	4 $\frac{1}{16}$	$\frac{9}{128}$
5†	2 $\frac{29}{32}$	5 $\frac{7}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	26	0.189	4 $\frac{59}{64}$	5 $\frac{1}{16}$	$\frac{9}{128}$
6	2 $\frac{29}{32}$	6 $\frac{7}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	32	0.185	5 $\frac{59}{64}$	6 $\frac{1}{16}$	$\frac{9}{128}$
7	2 $\frac{29}{32}$	7 $\frac{7}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	36	0.192	6 $\frac{59}{64}$	7 $\frac{1}{16}$	$\frac{9}{128}$
8	$\frac{7}{4}$	8 $\frac{7}{8}$	$\pm \frac{9}{64}$	$\frac{7}{16}$	40	0.196	7 $\frac{27}{32}$	8	$\frac{9}{64}$
10	$\frac{7}{4}$	10 $\frac{7}{8}$	$\pm \frac{9}{64}$	$\frac{7}{16}$	50	0.196	9 $\frac{27}{32}$	10	$\frac{9}{64}$
12	$\frac{7}{4}$	12 $\frac{7}{8}$	$\pm \frac{9}{64}$	$\frac{7}{16}$	60	0.197	11 $\frac{27}{32}$	12	$\frac{9}{64}$
14	$\frac{7}{4}$	14 $\frac{7}{8}$	$\pm \frac{9}{64}$	$\frac{7}{16}$	70	0.197	13 $\frac{27}{32}$	14	$\frac{9}{64}$

*Either mill corrugated or dovetail facings may be used.

†Only the 3 $\frac{1}{2}$ and 5-in. base bands shall be used for industrial trucks and tractors.

The standard width of solid tires is the nominal width in inches as measured inside the channel at the mean of the vertical seat of rubber, the tolerance being plus or minus $\frac{1}{16}$ in.

Felloe Bands

(S. A. E. Standard as revised by the Tire and Rim Division August, 1920.)

All edges of felloe bands and so far as pertinent metal wheel felloes shall have a radius not exceeding $\frac{3}{8}$ in. (2.38 mm.)

In measuring circumference of band, if there is not an allowance on the tapeline itself, a correction amounting to three times the thickness of the tapeline should be made.

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Allowable Tolerance in Felloe Bands

	Plus		Minus	
	in.	mm	in.	mm
Band circumf. before application	0	0	1/16	1.69
Band circumf. after application	1/16	1.59	1/32	0.79
Width of band	1/32	0.79	1/32	0.79
Thickness of band	0.006	0.15	0.006	0.15
Radius of band after application	1/16	1.59	1/16	1.59

Approximate Wood Wheel Diameters for Various Sizes and Types of Rims

Size Tire	Clincher and Quick Detachable Rims, Inches	Firestone Demountable Rims, Inches	Fisk Bolted on Rims, Inches	Fisk Demountable Rims, Inches	Stanweld No. 60 Demountable Rims, Inches	Stanweld No. 40 Demountable Rims, Inches	Continental and One Piece Transversely Split Demountable Rims, Inches	CONTINENTAL DEMOUNTABLE RIMS. METRIC SIZES	
								Size Tire	Wheel Dia., Inches
30x3½	22½	21½	21¾	20½	21¾	21¾	22	.....	.....
32x3½	24½	23½	23¾	22½	23¾	23¾	24	810x 90	23¾
34x3½	26½	25½	25¾	24½	25¾	25¾	26	870x 90	25¾
36x3½	28½	27½	27¾	26½	27¾	27¾	28	910x 90	27¾
30x4	21½	.....	.....	.....	30½	20¾	21	.....	.....
32x4	23½	22½	22¾	21½	22¾	22¾	23	.....	.....
34x4	25½	24½	24¾	23½	24¾	24¾	25	875x105	25¾
36x4	27½	26½	26¾	25½	26¾	26¾	27	915x105	27¾
32x4½	22½	21¾	.....	.....	21¾	21¾	23	920x120	21¾
34x4½	24½	23¾	23¾	22½	23¾	23¾	23¾	880x120	23¾
36x4½	26½	25¾	25¾	24½	25¾	25¾	25¾	920x120	25¾
34x5	23½	22¾	22¾	21½	22¾	22¾	22¾	.....	.....
36x5	25½	24¾	24¾	23½	24¾	24¾	24¾	.....	.....
38x5	.....	.....	26½	25½	.....	.....	.....	.....	.....
40x5	.....	.....	28½	27½	.....	.....	.....	.....	.....
36x5½	24½	23¾	.....	.....	23¾	23¾	.....	935x135	24¾
37x5½	25½	24¾	.....	.....	25¾	24¾	24¾	.....	.....
38x5½	.....	.....	25½	23¾	.....	.....	.....	.....	.....
40x5½	.....	.....	27½	25½	.....	.....	.....	.....	.....
40x6	.....	.....	25½	24½	.....	.....	.....	.....	.....

Metric Tires and Their American Equivalents

Metric Sizes	Approximate Size in Inches	Metric Sizes	Approximate Size in Inches
650 × 65	26 × 2½	870 × 90	34 × 3½
700 × 65	28 × 2½	910 × 90	36 × 3½
750 × 65	30 × 2½	960 × 90	38 × 3½
800 × 65	32 × 2½	1010 × 90	40 × 3½
830 × 65	33 × 2½	815 × 105	32 × 4
860 × 65	34 × 2½	875 × 105	34 × 4
700 × 85	28 × 3½	915 × 105	36 × 4
750 × 85	30 × 3½	820 × 120	32 × 4½-5
800 × 85	32 × 3½	850 × 120	33 × 4½-5
860 × 85	34 × 3½	880 × 120	34 × 4½-5
760 × 90	30 × 3½	920 × 120	36 × 4½-5
810 × 90	32 × 3½	1020 × 120	40 × 4½-5
840 × 90	32 × 3½	1080 × 120	42 × 4½-5

Index to Tables and Data Appears on Pages 1079 and 1080

Width and Depth of Piston Ring Grooves

A formula developed from approved practice with iron or steel cylinders and pistons

has

$$G = \sqrt{\frac{0.01 D^3}{8}} + 0.005$$

in which G is the depth of the piston ring groove and D the nominal diameter of the piston in inches. It is applicable for diameters from 1 to 7 inches and for concentric as well as eccentric rings. The width of rings and grooves can be standardized in five dimensions, as given in the appended table. As diameter H of groove bottom plus $2G$ equals actual piston diameter, piston clearance = $\frac{D - (2G + H)}{2}$

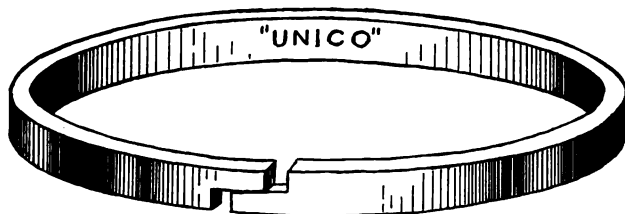
Diameter (D)	Depth (G)	Max'm Diameter H of Groove Bottom (Minus Tolerance 0.005)	Minimum Groove Width (Plus Tolerance 0.001)	Maximum Ring Width (Minus Tolerance 0.001)
1	.0791	.840	.1250	.1247
1½	.0811	.961	"	"
1½	.0834	1.081	"	"
1½	.0858	1.201	"	"
1½	.0884	1.321	"	"
1½	.0911	1.440	"	"
1½	.0939	1.559	"	"
1½	.0969	1.678	"	"
2	.1000	1.796	"	"
2½	.1032	1.915	"	"
2½	.1064	2.035	"	"
2½	.1098	2.151	"	"
2½	.1132	2.269	"	.1872
2½	.1167	2.387	.1875	"
2½	.1202	2.505	"	"
2½	.1238	2.622	"	"
3	.1275	2.739	"	"
3½	.1312	2.857	"	"
3½	.1349	2.974	"	"
3½	.1387	3.091	"	"
3½	.1425	3.208	"	"
3½	.1464	3.325	"	"
3½	.1503	3.442	"	"
3½	.1542	3.559	"	"
4	.1581	3.676	"	.2497
4½	.1621	3.793	.2500	"
4½	.1661	3.910	"	"
4½	.1701	4.027	"	"
4½	.1741	4.143	"	"
4½	.1782	4.260	"	"
4½	.1822	4.377	"	"
4½	.1863	4.493	"	"
5	.1904	4.610	"	.3120
5½	.1945	4.726	.3125	"
5½	.1986	4.843	"	"
5½	.2028	4.959	"	"
5½	.2069	5.076	"	"
5½	.2111	5.182	"	"
5½	.2152	5.309	"	"
5½	.2194	5.425	"	"
6	.2236	5.541	"	.3745
6½	.2278	5.658	.3750	"
6½	.2320	5.774	"	"
6½	.2362	5.890	"	"
6½	.2404	6.007	"	"
6½	.2447	6.123	"	"
6½	.2489	6.239	"	"
6½	.2531	6.356	"	"
7	.2574	6.472	"	"

Index to Tables and Data Appears on Pages 1079 and 1080

"UNICO"

PLAIN

PISTON RINGS



GUARANTEED 100 PER CENT PERFECT

LIGHT TIGHT

STEP CUT OR DIAGONAL CUT

These rings are perfectly light tight when put into a gauge.

Ground to within one-half thousandth in width.

Wall ground to within ten thousandths.

Perfect tight joint and as close on inside as on outside.

Made in all standard and oversizes.

Packed in cartons of one dozen, or wrapped in paper rolls containing 25 rings.

Specify and use "UNICO" Guaranteed Plain Rings

"HAVEN'T LEAKED YET"

Sales Department

WALTER ECKHOUSE & COMPANY

616-622 South Michigan Boulevard

CHICAGO, ILLINOIS

Manufactured by

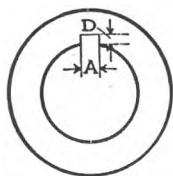
UNIVERSAL MACHINE WORKS

ST. LOUIS

3610 Enright Avenue

MISSOURI

Please mention The Automobile Trade Directory



Data for Keyseats and Keyways

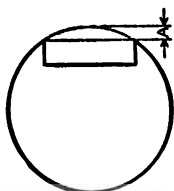
(American Machinist)

Standard Sizes of Keyseats

For straight keys, height of Keyseat throughout = D .For feather keys, $D = \frac{1}{2}A$.Keyseat in shaft same depth as D in small end.Standard taper = $\frac{1}{8}$ inch per foot.

Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches	Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches
1 to $1\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$2\frac{1}{16}$ to $2\frac{3}{8}$	$\frac{11}{16}$	$\frac{13}{16}$
$1\frac{1}{8}$ to $1\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{4}$	$2\frac{3}{8}$ to $3\frac{1}{8}$	$\frac{7}{8}$	$\frac{3}{4}$
$1\frac{1}{4}$ to $1\frac{1}{2}$	$\frac{15}{16}$	$\frac{1}{2}$	$3\frac{1}{8}$ to $3\frac{3}{8}$	$\frac{15}{16}$	$\frac{17}{16}$
$1\frac{1}{2}$ to $1\frac{7}{8}$	$\frac{1}{2}$	$\frac{9}{16}$	$3\frac{3}{8}$ to $3\frac{1}{2}$	$\frac{1}{2}$	$\frac{9}{16}$
$1\frac{7}{8}$ to $2\frac{1}{8}$	$\frac{3}{4}$	$\frac{11}{16}$	$3\frac{1}{2}$ to $3\frac{7}{8}$	$\frac{11}{16}$	$\frac{7}{8}$
$2\frac{1}{8}$ to $2\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{4}$	$3\frac{7}{8}$ to $4\frac{1}{8}$	1	$\frac{11}{16}$
$2\frac{1}{4}$ to $2\frac{3}{8}$	$\frac{15}{16}$	$\frac{13}{16}$	$4\frac{1}{8}$ to $4\frac{3}{8}$	$\frac{11}{16}$	$\frac{13}{16}$

Table for Total Keyway Depth



This table will be found very useful in feeding the milling cutter down into a shaft. Having the size of the shaft to be keywayed, look down the column marked "Size of Shaft" until you come to the number representing that size; then follow this line to the right until you reach the column representing the size keyway, and the decimal there represented is the distance "A," which added to the depth of the keyway will give the total depth from the point where the cutter first begins to cut.

Size of Shaft, Inches	WIDTH OF KEYWAY IN INCHES				
	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$
	"A" IN INCHES				
$\frac{1}{8}$	0.0325				
$\frac{1}{16}$	0.0289				
$\frac{3}{16}$	0.0254	0.0413			
$\frac{1}{4}$	0.0236	0.0379			
$\frac{5}{16}$	0.0220	0.0346	0.0511		
$\frac{3}{8}$	0.0198	0.0314	0.0465		
$\frac{7}{16}$	0.0177	0.0283	0.0420	0.0583	
$\frac{1}{2}$	0.0164	0.0264	0.0392	0.0544	
$1\frac{1}{8}$	0.0152	0.0246	0.0365	0.0506	0.0670
$1\frac{1}{16}$	0.0143	0.0228	0.0342	0.0476	0.0625
$1\frac{1}{4}$	0.0136	0.0210	0.0319	0.0446	0.0581
$1\frac{3}{8}$	0.0131	0.0204	0.0304	0.0441	0.0551
$1\frac{1}{2}$	0.0127	0.0198	0.0290	0.0397	0.0522
$1\frac{3}{4}$	0.0123	0.0191	0.0279	0.0380	0.0499
$1\frac{7}{8}$	0.0120	0.0185	0.0268	0.0364	0.0477
2	0.0114	0.0174	0.0254	0.0346	0.0453
$2\frac{1}{8}$	0.0110	0.0164	0.0240	0.0328	0.0429
$2\frac{1}{4}$	0.0107	0.0158	0.0231	0.0309	0.0412
$2\frac{3}{8}$	0.0105	0.0153	0.0221	0.0291	0.0395
$2\frac{1}{2}$	0.0102	0.0147	0.0214	0.0282	0.0383
$2\frac{3}{4}$	0.0099	0.0142	0.0207	0.0274	0.0371
$2\frac{7}{8}$	0.0095	0.0136	0.0198	0.0265	0.0355
3	0.0093	0.0130	0.0190	0.0257	0.0339
$3\frac{1}{8}$	0.0090	0.0127	0.0184	0.0250	0.0328
$3\frac{1}{4}$	0.0088	0.0124	0.0179	0.0243	0.0317
$3\frac{3}{8}$	0.0078	0.0111	0.0168	0.0229	0.0299
$3\frac{1}{2}$	0.0070	0.0107	0.0159	0.0216	0.0282
$3\frac{3}{4}$	0.0066	0.0102	0.0152	0.0202	0.0267
4	0.0063	0.0098	0.0146	0.0194	0.0253
$4\frac{1}{8}$	0.0060	0.0090	0.0139	0.0185	0.0242
$4\frac{1}{4}$	0.0058	0.0088	0.0133	0.0176	0.0230
$4\frac{3}{8}$	0.0056	0.0084	0.0126	0.0168	0.0220
$4\frac{1}{2}$	0.0053	0.0081	0.0119	0.0161	0.0211

Index to Tables and Data Appears on Pages 1079 and 1080

Brakes and Clutches

Designs for brakes and clutches for motor vehicles have been developed empirically, and the development of brakes continues to be carried on without close reference to the mathematical formulas for retardation of a moving mass. The maintenance of constant conditions in the braking organs, especially a constant co-efficient of friction, and the suitable disposal of the heat generated by braking efforts, especially on long declivities, constitute the points on which difficulties are still mostly experienced. In European motor trucks, friction brakes are usually designed with metal to metal contact, this giving harsh action but improved (though not yet sufficient) heat convection. In American-built vehicles, the friction surfaces are usually metal and fabric, and the properties of the latter under all actual conditions of vehicle operation are the most important factor, assuming that conventional types and dimensions are employed.

Conclusive data on brake and clutch facings have not as yet been compiled or received the sanction of authorities.

Formulas for Cone Clutches (C. A. Schaefer)

H.P. = horse-power transmitted.

N = revolutions of crank-shaft per minute.

r = mean radius of friction cone, in inches.

r_1 = large radius of friction cone, in inches.

r_2 = small radius of friction cone, in inches.

R_1 = outside radius of leather band, in inches.

R_2 = inside radius of leather band, in inches.

v = velocity of a point at distance r from the center, in feet per minute.

F = tangential force acting at radius r , in pounds.

P_n = total normal pressure between cone surfaces, in pounds.

P_s = spring pressure, in pounds.

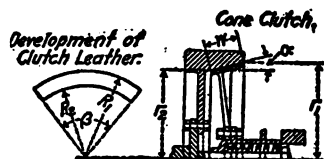
α = angle of clutch surface with axis of shaft = 7 to 13 degrees.

β = included angle of clutch leather, when developed, in degrees.

f = coefficient of friction = 0.20 to 0.25 for greasy leather on iron.

p = allowable pressure per square inch of leather band = 1 to 8 pounds.

W = width of clutch leather, in inches.



$$R_1 = \frac{r_1}{\sin \alpha} \quad \text{H.P.} = \frac{P_n f r N}{63025}$$

$$R_2 = \frac{r_2}{\sin \alpha} \quad \text{Engagement with some slip:}$$

$$\beta = \sin \alpha \times 360 \quad P_n = \frac{P_s}{\sin \alpha}$$

$$r = \frac{r_1 \times r_2}{2} \quad P_s = \frac{\text{H.P.} \times 63025 \sin \alpha}{f r N}$$

$$v = \frac{2\pi r N}{12} \quad \text{Engagement without slip:}$$

$$F = \frac{\text{H.P.} \times 33000}{v} \quad P_n = \frac{P_s}{\sin \alpha + f \cos \alpha}$$

$$W = \frac{P_n}{2\pi r p}$$

$$P_s = \frac{\text{H.P.} \times 63025 (\sin \alpha + f \cos \alpha)}{f r N}$$

Multiple Disc Clutches

While multiple disk clutches are designed and dimensioned mainly under the guidance of experience, acceleration formulas are used for checking the designs in each case.

A formula for clutch capacity which is employed for this purpose is the following:

$$Hp = \frac{PfSRN}{63.025}$$

in which P is spring pressure, f co-efficient of friction, S number of friction surfaces, R mean radius of friction ring in inches and N maximum revolutions per minute of crank-shaft.

It is found that this formula agrees well with experience if the value for f is taken as 12 to 15 per cent for asbestos woven clutch facings.

The torque which can be applied through a multiple disk clutch with V-grooves in the disks is determined by the formula:

$$T \text{ (in pounds-inches)} = rPf(N-1)C$$

in which r is the radius in inches of the V-groove, P the spring pressure, f equals 0.1 co-efficient of friction, N is the total number of disks and C a constant, which is 3.5 for automobile clutches and 2.5 for aeroplane clutches. The former have V-grooves of a 35-deg. angle, the latter of 45-deg. angle.

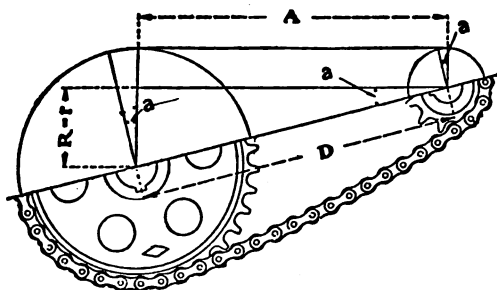
Widths of Silent Chains

According to recommended practice, the standard width of a silent chain is the width over all tension members and the maximum width of chain over rivet heads is this nominal width plus six-tenths the pitch. The table shows the extreme widths for the various pitches. Width of sprocket for the same nominal width of chain will vary according to the method of guiding the chain.



Chain Width No.	(N) Width Over Tension Members	EXTREME WIDTH OF CHAIN (N+0.6P)							
		3/8-In. Pitch	1/2-In. Pitch	5/8-In. Pitch	3/4-In. Pitch	1-In. Pitch	1 1/4-In. Pitch	1 1/2-In. Pitch	2-In. Pitch
4	1/2	0.725	0.800	0.875	.....	.....	.....	.....	.....
6	3/4	0.975	1.050	1.125	1.200	.....	.....	.....	.....
8	1	1.225	1.300	1.375	1.450	1.600	.....	.....	.....
10	1 1/4	1.475	1.550	1.625	1.700	1.850	2.000	.....	.....
12	1 1/2	1.725	1.800	1.875	1.950	2.100	2.250	2.400	.....
14	1 3/4	1.975	2.050	2.125	2.200	2.350	2.500	2.650	.....
16	2	2.225	2.300	2.375	2.450	2.600	2.750	2.900	3.200
18	2 1/4	2.475	2.550	2.625	2.700	2.850	3.000	3.150	3.450
20	2 1/2	2.725	2.800	2.875	2.950	3.100	3.250	3.400	3.700
24	3	3.225	3.300	3.375	3.450	3.600	3.750	3.900	4.200
28	3 1/2	.....	3.800	3.875	3.950	4.100	4.250	4.400	4.700
32	4	.....	4.300	4.375	4.450	4.600	4.750	4.900	5.200
40	5	.....	.....	5.375	5.450	5.600	5.750	5.900	6.200
48	6	.....	.....	6.375	6.450	6.600	6.750	6.900	7.200

Length of Sprocket Chains



D = Distance between centers.

A = Distance between limits of contact.

R = Pitch radius of large sprocket.

r = Pitch radius of small sprocket.

N = Number of teeth on large sprocket.

n = Number of teeth on small sprocket.

P = Pitch of chain and sprockets. (Distance from center to center of chain pins.)

$180^\circ + 2\alpha$ = Angle of contact—large sprocket.

$180^\circ - 2\alpha$ = Angle of contact—small sprocket.

$$\sin \alpha = \frac{R - r}{D}$$

$$A = D \cos \alpha$$

Length of chain = L

$$(1) \quad L = \frac{(90 + \alpha) NP}{180} + \frac{(90 - \alpha) nP}{180} + 2A$$

With only R , r and D known, the length of a sprocket chain can be figured with sufficient accuracy (very slightly short) from the formula.

$$(2) \quad L = (R + r) \pi + 2 \sqrt{D^2 - (R - r)^2} + \frac{2(R - r)^2}{D}$$

which is simple when figures are inserted.

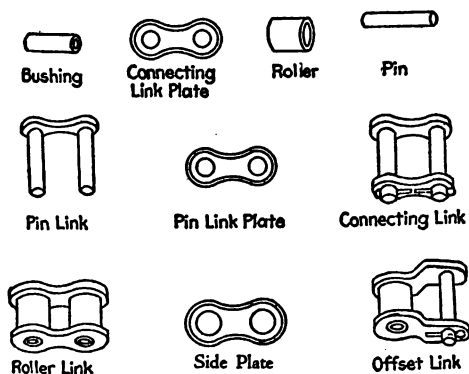
For example, with $R = 6$, $r = 2$ and $D = 20$,

$$L = 8 \times 3.1416 + 2 \sqrt{400 - 16} + \frac{32}{20} = 25.133 + 2 \times 19.60 + 1.60 = 65.93.$$

The figure obtained is rounded upward to allow for slack and to correspond to a multiple of chain pitch.

Nomenclature and Dimensions of Roller-Chains

Recommended by S. A. E. and A. S. M.



Side Plate, or Inside Plate, for factory use only.

Heavy Series Dimensions

Pitch	Roller Diameter	Pin Diameter	Thickness of Inside Plates	Chain Width Min. (W)	Measuring Load, Lb.	Approx. Test Load, Lb.
$\frac{3}{8}$	0.250	0.125	0.050	0.250	14	464
$\frac{1}{2}$	0.3125	0.156	0.060	0.3125	25	825
$\frac{5}{8}$	0.400	0.200	0.080	0.375	39	1280
$\frac{3}{4}$	0.469	0.234	0.094	0.500	56	1850
1	0.625	0.3125	0.125	0.625	100	3300
$1\frac{1}{4}$	0.750	0.375	0.156	0.750	156	5150
$1\frac{1}{2}$	0.875	0.4375	0.1875	1.000	225	7430
$1\frac{3}{4}$	1.000	0.500	0.220	1.125	325	10700
2	1.125	0.5625	0.250	1.250	400	13200
$2\frac{1}{2}$	1.550	0.781	0.3125	1.5625	625	20600
3	1.900	0.9375	0.375	1.875	900	29700
4	2.500	1.250	0.500	2.500	1600	52800
5	3.000	1.500	0.625	3.000	2500	82500

Light Series—The light series of roller chains for any given pitch shall use the roller, bushing and pin dimensions for the second shorter pitch of the heavy series.

Medium Series—The medium series of roller chains for any given pitch shall use the roller, bushing and pin dimensions for the next shorter pitch of the heavy series.

Fan Belts and Pulleys S. A. E. Standard Widths

Belt Width, In. $+ 1/32, - 1/32$	Pulley Width, In. $+ .005, - .005$
$\frac{3}{4}$	0.875
1	1.125
$1\frac{1}{4}$	1.375
$1\frac{1}{2}$	1.685

Brake Lining S. A. E. Standard Standard Sizes Only

Thickness, In.					
	5/32	3/16	1/4	5/16	3/8
Width, In. $+ 1/16$ $- 1/16$	$1\frac{1}{4}$ $1\frac{1}{4}$ $1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$	$1\frac{3}{4}$ 2 $2\frac{1}{4}$ $2\frac{1}{2}$ $2\frac{3}{4}$ 3	$2\frac{1}{4}$ $2\frac{1}{2}$ $2\frac{3}{4}$ 3 $3\frac{1}{4}$ 4	$2\frac{3}{4}$ 3 $3\frac{1}{2}$ 4 $4\frac{1}{2}$
Tolerances, In.	$+ .000$ $-.020$	$+ .000$ $-.020$	$+ .000$ $-.1/32$	$+ .000$ $-.1/32$	$+ .000$ $-.1/32$

Non-Ferrous Metal Tubing Tolerances

Tubing can be furnished in copper, and the commercial alloys of copper and zinc, such as high brass, bronze, phosphor bronze, and tobin bronze.

Composition.—As specified to meet the requirements of use.

Temper.—As specified in the order; may be hard, half hard or annealed. If annealed, the tubing may be soft, or light annealed.

Size variation.—On inside and outside diameter and the thickness of the walls, as follows:

Outside and Inside Dimensions

Up to $\frac{1}{2}$ in. inclusive.....	0.002 in. over or under
Over $\frac{1}{2}$ in. to and including $\frac{3}{4}$ in.....	0.0025 in. over or under
Over $\frac{3}{4}$ in. to and including 1 in.....	0.003 in. over or under
Over 1 in. to and including $1\frac{1}{4}$ in.....	0.0035 in. over or under
Over $1\frac{1}{4}$ in. to and including $1\frac{1}{2}$ in.....	0.004 in. over or under
Over $1\frac{1}{2}$ in. to and including $1\frac{3}{4}$ in.....	0.0045 in. over or under
Over $1\frac{3}{4}$ in. to and including 2 in.....	0.005 in. over or under
Over 2 in.	$\frac{1}{4}$ of 1 per cent. over or under

No combination of variations on the same tube shall make the thickness of the wall vary from the nominal by more than the following amounts:

Thickness of Wall

Up to and including $1/64$ in.....	0.001 in. over or under
Over $1/64$ in. to and including $1/32$ in.....	0.002 in. over or under
Over $1/32$ in. to and including $1/16$ in.....	0.003 in. over or under
Over $1/16$ in. to and including $\frac{1}{8}$ in.....	0.005 in. over or under
Over $\frac{1}{8}$ in. to and including $\frac{1}{4}$ in.....	0.008 in. over or under
Over $\frac{1}{4}$ in. to and including $5/16$ in.....	0.0125 in. over or under
Over $5/16$ in. to and including $\frac{3}{8}$ in.....	0.015 in. over or under

Special limits.—On all stock where the above commercial variations are not permissible limits shall be specified in the order.

Stock Sizes of Seamless Steel Tubes (S. A. E. STANDARD) AND THEIR TORQUE CAPACITIES IN POUNDS-FEET, AS FIGURED BY C. W. SPICER

Out. Dia., In.	TUBE THICKNESS														Solid Shaft
	BIRMINGHAM WIRE GAGE AND FRACTIONS IN UPPER LINE; DECIMALS OF AN INCH LOWER LINE														
	20	18	16	13	11	10	$\frac{9}{16}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{1}{8}$		
	.035	.049	.065	.095	120	134	.156	.188	.250	.313	.375	.500	.625		
$\frac{1}{16}$	9.28	11.9	14.3	17.5										20.7	
$\frac{1}{8}$	15.2	19.7	24.1	30.5										40.3	
$\frac{3}{16}$	22.3	29.3	36.7	47.3										69.7	
$\frac{1}{2}$	30.9	41.6	52.1	68.4	84.2	109.0	117.0	127.0	139.0	154.0				110.0	
$\frac{3}{4}$	41.3	55.6	70.2	93.5	109.0	154.5	169.6	187.5	211.0					165.0	
1	52.5	71.2	90.4	122.0	144.0	198.0	219.0	244.0	279.0	300.0	312.0			235.0	
1 $\frac{1}{4}$	66.3	89.2	114.0	154.8	184.0	247.0	273.0	309.0	356.0	388.0	408.0			323.0	
1 $\frac{1}{2}$	79.9	108.6	139.5	191.2	228.0	301.0	336.0	378.0	444.0	489.0	518.0			429.0	
1 $\frac{3}{4}$	96.2	131.0	168.5	232.0	280.0	367.0	427.0	545.0	650.0	729.0	785.0	546.0		558.0	
2														885.0	
2 $\frac{1}{4}$														1,320	
2 $\frac{1}{2}$														1,880	
2 $\frac{3}{4}$														2,580	
3														3,435	
3 $\frac{1}{4}$														4,460	
3 $\frac{1}{2}$														5,680	
3 $\frac{3}{4}$														7,085	

Sizes to the left of the left-hand zigzag line are difficult to straighten except with special equipment and are considered too flimsy for automobile propeller-shafts. Sizes to the right of the right-hand zigzag line are more than half as heavy as solid shafts of the same outside diameters.

Steel Bands and Strips

Steel bands, band edged flats and hoops or strips are rolled in the following widths and gages (all measurements in inches):

$\frac{1}{8}$ increasing by $\frac{1}{16}$ ths to	Width	Thickness	
		No. 4 = .238 to No.	18 = .049
$\frac{1}{16}$	$\frac{1}{8}$	" 4 = .238 "	" 19 = .042
$\frac{2}{16}$	$\frac{3}{8}$	" 4 = .238 "	" 23 = .025
$\frac{3}{16}$	$\frac{1}{2}$	" 4 = .238 "	" 22 = .028
$\frac{4}{16}$	$\frac{3}{4}$	" 1 = .300 "	" 21 = .032
$\frac{5}{16}$	1	" 1 = .300 "	" 20 = .035
$\frac{6}{16}$	1 $\frac{1}{4}$	" 1 = .300 "	" 19 = .042
$\frac{7}{16}$	1 $\frac{3}{4}$	" 00 = .380 "	" 18 = .049
$\frac{8}{16}$	2	" 00 = .380 "	" 17 = .058
$\frac{9}{16}$	2 $\frac{1}{4}$	" 00 = .380 "	" 16 = .065
$\frac{10}{16}$	2 $\frac{3}{4}$	" 1 = .300 "	" 14 = .083
$\frac{11}{16}$	3	" 1 = .300 "	" 14 = .083
$\frac{12}{16}$	3 $\frac{1}{4}$	" 1 = .300 "	" 14 = .083
$\frac{13}{16}$	3 $\frac{3}{4}$	" 1 = .300 "	" 14 = .083
$\frac{14}{16}$	4	" 1 = .300 "	" 14 = .083
$\frac{15}{16}$	4 $\frac{1}{4}$	" 1 = .300 "	" 14 = .083
	4 $\frac{3}{4}$	" 1 = .300 "	" 14 = .083
	5	" 1 = .300 "	" 12 = .109

While the above sizes are generally considered standard, the majority of the mills roll strips as wide as 20 inches in the heavier gages.

DECIMAL SPECIFICATIONS PREFERRED

The gage used by the manufacturers of bands, hoops and strips is the Birmingham Wire Gage but it is recommended by the S. A. E. when writing specifications for bands, hoops and strips that the thickness desired be expressed in thousandths of an inch.

List of Nine Different Standard Wire Gauges Used In the United States.

DECIMAL EQUIVALENTS (Inches)

No. of Gauge	American or Brown & Sharpe Iron Wire	Birmingham or Stubbs Iron Wire	Washburn & Moen Iron Wire	Imperial Wire Gauge	U. S. Standard for Plate (Iron & Steel)	Stubbs Steel Wire	Twist Drill and Steel Wire	Washburn & Moen Music Wire	Wood and Machine Screws	No. of Gauge	Fractional Parts of an Inch	Decimal Equiv. of Sixty-fourths, etc.
8-0	.....	.....	.....	.....	.....	.....	This gauge from one to three thousandths larger than same Nos. of Stubbs steel wire gauge	.0083	.....	8-0	$\frac{1}{16}$	.01563
7-0	.....	.....	.....	.....	.500	.....	.....	.0087	.....	7-0	$\frac{1}{8}$	.03125
6-0	.....	.....	.....	.464	.469	.....	.....	.0095	.....	6-0	$\frac{3}{16}$	.0625
5-0	.....	.....	.....	.432	.438	.....	.....	.010	.....	5-0	$\frac{1}{4}$	.07813
4-0	.....	.....	.....	.....	.406	.....	.....	.011	.....	4-0	$\frac{3}{8}$	.09375
3-0	.460	.454	.394	.380	.372	.375	.....	.012	.035	3-0	$\frac{1}{2}$	.10938
2-0	.365	.363	.334	.331	.338	.344	.....	.013	.045	2-0	$\frac{5}{8}$	.125
1	.325	.340	.307	.300	.283	.281	.....	.014	.058	1	$\frac{3}{4}$	.14063
0	.289	.300	.283	.300	.281	.277	.228	.016	.071	0	$\frac{7}{8}$	.15625
1	.258	.284	.263	.276	.266	.219	.221	.017	.084	1	$\frac{15}{16}$	.17188
2	.229	.259	.244	.252	.250	.212	.213	.018	.097	2	$\frac{1}{8}$	.1875
3	.204	.238	.225	.232	.234	.207	.209	.019	.110	3	$\frac{1}{4}$	.20313
4	.182	.220	.207	.212	.219	.204	.206	.020	.124	4	$\frac{3}{8}$	.21875
5	.162	.203	.192	.192	.203	.201	.204	.022	.137	5	$\frac{1}{2}$	.23438
6	.144	.180	.177	.176	.188	.199	.201	.023	.150	6	$\frac{5}{8}$	.25
7	.128	.165	.162	.160	.172	.197	.199	.024	.163	7	$\frac{3}{4}$	.26563
8	.114	.148	.148	.144	.156	.194	.196	.026	.176	8	$\frac{7}{8}$	.28125
9	.102	.134	.135	.128	.141	.191	.194	.027	.189	9	$\frac{15}{16}$	.29688
10	.091	.120	.121	.116	.125	.188	.191	.028	.203	10	$\frac{1}{8}$	.3125
11	.081	.109	.106	.104	.109	.185	.189	.030	.216	11	$\frac{1}{4}$	.32813
12	.072	.095	.092	.092	.094	.182	.185	.031	.229	12	$\frac{3}{8}$	.34375
13	.064	.083	.080	.080	.078	.180	.182	.033	.242	13	$\frac{1}{2}$	.35938
14	.057	.072	.072	.072	.070	.178	.180	.035	.255	14	$\frac{5}{8}$	.375
15	.051	.065	.063	.064	.063	.175	.177	.036	.268	15	$\frac{3}{4}$	.39063
16	.045	.058	.054	.056	.055	.172	.173	.038	.282	16	$\frac{7}{8}$	.40625
17	.040	.049	.048	.048	.050	.168	.170	.040	.295	17	$\frac{15}{16}$	.42188
18	.036	.042	.041	.040	.044	.164	.166	.041	.308	18	$\frac{1}{8}$	.4375
19	.032	.035	.035	.036	.038	.161	.161	.043	.321	19	$\frac{1}{4}$	.45313
20	.028	.032	.032	.032	.034	.157	.159	.046	.334	20	$\frac{3}{8}$	.46875
21	.025	.028	.029	.028	.031	.155	.157	.048	.347	21	$\frac{1}{2}$	.48438
22	.023	.025	.025	.024	.028	.153	.154	.051	.360	22	$\frac{5}{8}$	.5
23	.020	.022	.023	.022	.025	.151	.152	.055	.374	23	$\frac{3}{4}$	.51563
24	.018	.020	.020	.020	.022	.148	.150	.059	.387	24	$\frac{7}{8}$	.53125
25	.016	.018	.018	.018	.019	.146	.147	.063	.400	25	$\frac{15}{16}$	.54688
26	.0141	.016	.0173	.0164	.0171	.143	.144	.066	.413	26	$\frac{1}{8}$	.5625
27	.0126	.014	.0162	.0149	.0156	.139	.141	.072	.426	27	$\frac{1}{4}$	.57813
28	.0112	.013	.015	.0136	.014	.134	.136	.076	.439	28	$\frac{3}{8}$	.59375
29	.010	.012	.014	.0124	.0125	.127	.129	.080	.453	29	$\frac{1}{2}$	.60938
30	.0089	.010	.0132	.0116	.0109	.120	.120	.....	.466	30	$\frac{5}{8}$	.625
31	.0079	.009	.0128	.0108	.0101	.115	.116	.....	.479	31	$\frac{3}{4}$	.64063
32	.007	.008	.0118	.010	.0093	.112	.113	.....	.492	32	$\frac{7}{8}$	.65625
33	.0063	.007	.0104	.0092	.0085	.110	.111	.....	.505	33	$\frac{15}{16}$	.67188
34	.0056	.005	.0095	.0084	.0078	.108	.110	.....	.518	34	$\frac{1}{8}$	.6875
35	.005	.004	.009	.0076	.007	.106	.1065	.....	.532	35	$\frac{1}{4}$	.70313
36	.0044	.....	.....	.0068	.0066	.103	.104	.....	.545	36	$\frac{3}{8}$	.71875
37	.0039	.....	.....	.006	.0062	.101	.1015	.....	.558	37	$\frac{1}{2}$	.73438
38	.0035	.....	.....	.0052	.005	.099	.0995	.....	.571	38	$\frac{5}{8}$	.75
39	.0031	.....	.....	.0048	.....	.097	.098	.....	.584	39	$\frac{3}{4}$	.76563
40	.....	.....	.....	.....	.095	.096	.096	.....	.597	40	$\frac{7}{8}$	.78125
41	.....	.....	.....	.....	.092	.094	.094	.....	.611	41	$\frac{15}{16}$	.79688
42	.....	.....	.....	.....	.088	.089	.089	.....	.624	42	$\frac{1}{8}$	.8125
43	.....	.....	.....	.....	.085	.086	.086	.....	.637	43	$\frac{1}{4}$	.82813
44	.....	.....	.....	.....	.081	.082	.082	.....	.650	44	$\frac{3}{8}$	.84375
45	.....	.....	.....	.....	.079	.081	.081	.....	.663	45	$\frac{1}{2}$	.85938
46	.....	.....	.....	.....	.076	.079	.079	.....	.676	46	$\frac{5}{8}$	.875
47	.....	.....	.....	.....	.073	.076	.076	.....	.690	47	$\frac{3}{4}$	.89063
48	.....	.....	.....	.....	.072	.073	.073	.....	.703	48	$\frac{7}{8}$	.90625
49	.....	.....	.....	.....	.069	.070	.070	.....	.716	49	$\frac{15}{16}$	.92188
50	.....	.....	.....	.....	.....	.....	.....	.....	.....	50	$\frac{1}{8}$	.....

LETTER SIZES STUBBS STEEL WIRE

A	.....	.234	I	.....	.272	R	.....	.339
B	.....	.238	J	.....	.277	S	.....	.348
C	.....	.242	K	.....	.281	T	.....	.358
D	.....	.246	L	.....	.290	U	.....	.368
E	.....	.250	M	.....	.295	V	.....	.377
F	.....	.257	N	.....	.302	W	.....	.386
G	.....	.261	O	.....	.316	X	.....	.397
H	.....	.266	P	.....	.323	Y	.....	.404
			Q	.....	.332	Z	.....	.413

Sizes of Numbers of the United States Standard Gauge for Sheet and Plate Iron and Steel

AN ACT ESTABLISHING A STANDARD GAUGE FOR SHEET AND PLATE IRON AND STEEL

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That for the purpose of securing uniformity the following is established as the only gauge for sheet and plate iron and steel in the United States of America, namely:

NUMBER OF GAUGE	Approximate Thickness in Fractions of an Inch	Approximate Thickness in Decimal Parts of an Inch	Weight per Square Foot in Ounces Avoirdupois	Weight per Square Foot in Pounds Avoirdupois
0000000	$\frac{1}{2}$	.5	320	20.00
000000	$\frac{1}{16}$	.46875	300	18.75
00000	$\frac{1}{8}$	.4375	280	17.50
0000	$\frac{3}{32}$	.40625	260	16.25
000	$\frac{1}{4}$	.375	240	15.00
00	$\frac{5}{16}$	.34375	220	13.75
0	$\frac{3}{8}$	.3125	200	12.50
1	$\frac{1}{2}$	.28125	180	11.25
2	$\frac{5}{8}$	.265625	170	10.625
3	$\frac{3}{4}$	.25	160	10.00
4	$\frac{7}{8}$	.234375	150	9.375
5	$\frac{1}{2}$	.21875	140	8.75
6	$\frac{1}{2}$	.203125	130	8.125
7	$\frac{1}{2}$	.1875	120	7.5
8	$\frac{1}{2}$	.171875	110	6.875
9	$\frac{1}{2}$	.15625	100	6.25
10	$\frac{1}{2}$	.140625	90	5.625
11	$\frac{1}{2}$	.125	80	5.00
12	$\frac{1}{2}$	.109375	70	4.375
13	$\frac{1}{2}$	.09375	60	3.75
14	$\frac{1}{2}$	.078125	50	3.125
15	$\frac{1}{2}$	.0703125	45	2.8125
16	$\frac{1}{2}$	.0625	40	2.5
17	$\frac{1}{2}$	.05625	36	2.25
18	$\frac{1}{2}$	.05	32	2.
19	$\frac{1}{2}$	.04375	28	1.75
20	$\frac{1}{2}$	.0375	24	1.50
21	$\frac{1}{2}$	.034375	22	1.375
22	$\frac{1}{2}$	.03125	20	1.25
23	$\frac{1}{2}$	.028125	18	1.25
24	$\frac{1}{2}$	.025	16	1.
25	$\frac{1}{2}$	.021875	14	.875
26	$\frac{1}{2}$	.01875	12	.75
27	$\frac{1}{2}$	.0171875	11	.6875
28	$\frac{1}{2}$	.015625	10	.625
29	$\frac{1}{2}$	.0140625	9	.5625
30	$\frac{1}{2}$	.0125	8	.5
31	$\frac{1}{2}$	.0109375	7	.4375
32	$\frac{1}{2}$	.01015625	6 $\frac{1}{2}$	.40625
33	$\frac{1}{2}$	.009375	6	.375
34	$\frac{1}{2}$	.00859375	5 $\frac{1}{2}$	.34375
35	$\frac{1}{2}$	.0078125	5	.3125
36	$\frac{1}{2}$	.00703125	4 $\frac{1}{2}$	.28125
37	$\frac{1}{2}$	.006640625	4 $\frac{1}{2}$	.265625
38	$\frac{1}{2}$	.00625	4	.25

And on and after July first, eighteen hundred and ninety-three, the same and no other shall be used in determining duties and taxes levied by the United States of America on sheet and plate iron and steel. But this act shall not be construed to increase duties upon any articles which may be imported.

SEC. 3.—That in the practical use and application of the standard gauge hereby established a variation of two and one-half per cent. either way may be allowed.

Approved March 3, 1893.

Weight in Pounds of a Linear Foot of Round, Square and Octagon Steel

Size in Inches	Round	Octagon	Square	Size in Inches	Round	Octagon	Square
$\frac{1}{8}$	.010	.011	.013	$2\frac{1}{2}$	16.79	17.71	21.37
$\frac{1}{4}$	.042	.044	.053	$2\frac{5}{8}$	18.51	19.52	23.56
$\frac{3}{8}$	.094	.099	.120	$2\frac{3}{4}$	20.31	21.42	25.86
$\frac{1}{2}$	.168	.177	.214	$2\frac{7}{8}$	22.20	23.41	28.27
$\frac{5}{8}$	.262	.277	.334	3	24.17	25.50	30.78
$\frac{3}{4}$	.378	.398	.491	$3\frac{1}{8}$	26.23	27.66	33.40
$\frac{7}{8}$	.514	.542	.655	$3\frac{1}{4}$	28.37	29.92	36.12
$1\frac{1}{8}$	.671	.708	.855	$3\frac{3}{8}$	30.59	32.27	38.95
$\frac{1}{2}$	.850	.896	1.082	$3\frac{1}{2}$	32.90	34.70	41.89
$\frac{1}{2}$	1.049	1.107	1.336	$3\frac{5}{8}$	35.29	37.23	44.94
$1\frac{1}{4}$	1.270	1.339	1.616	$3\frac{7}{8}$	37.77	39.84	48.09
$\frac{3}{4}$	1.511	1.594	1.924	$3\frac{3}{4}$	40.33	42.54	51.35
$1\frac{3}{8}$	1.773	1.870	2.258	4	42.97	45.33	54.72
$\frac{7}{8}$	2.056	2.169	2.618	$4\frac{1}{8}$	48.51	51.17	61.77
$\frac{1}{2}$	2.361	2.490	3.006	$4\frac{1}{4}$	54.39	57.37	69.25
	2.686	2.833	3.420	$4\frac{3}{8}$	60.60	63.92	77.16
$1\frac{1}{2}$	3.399	3.585	4.328	5	67.15	70.83	85.50
$1\frac{3}{4}$	4.197	4.427	5.344	$5\frac{1}{8}$	74.03	78.08	94.26
$1\frac{1}{2}$	5.078	5.356	6.466	$5\frac{1}{2}$	81.25	85.70	103.45
$1\frac{1}{2}$	6.044	6.374	7.695	$5\frac{3}{4}$	88.80	93.67	113.07
$1\frac{1}{2}$	7.093	7.481	9.031	6	96.69	101.99	123.12
$1\frac{3}{4}$	8.226	8.674	10.474	7	131.61	138.82	167.58
$1\frac{1}{2}$	9.443	9.960	12.023	8	171.90	181.32	218.88
2	10.744	11.332	13.680	9	217.57	229.48	277.02
$2\frac{1}{8}$	12.129	12.793	15.443	10	268.60	283.31	342.00
$2\frac{1}{4}$	13.598	14.343	17.314	11	325.01	342.80	413.82
$2\frac{3}{8}$	15.151	15.981	19.291	12	386.79	407.97	492.48

Proportionate Weight of Castings to Weight of Wood Patterns

A PATTERN WEIGHING ONE POUND, MADE OF (Less Weight of Core Prints)	Cast Iron	Brass	Copper	Bronze	Bell Metal	Zinc
Pine or Fir.....	16	15.8	16.7	16.3	17.1	13.5
Oak.....	9	10.1	10.4	10.3	10.9	8.6
Beech.....	9.7	10.9	11.4	11.3	11.9	9.1
Linden.....	13.4	15.1	16.7	15.5	16.3	12.9
Pear.....	10.2	11.5	11.9	11.8	12.4	9.8
Birch.....	10.6	11.9	12.3	12.2	12.9	10.2
Alder.....	12.8	14.3	14.9	14.7	15.5	12.2
Mahogany.....	11.7	13.2	13.7	13.5	14.2	11.2
Brass.....	0.85	0.95	0.99	0.98	1.0	0.81

**WEIGHT OF STEEL PER LINEAR FOOT
PLAT SIZES**

	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	5	6	7
$\frac{1}{8}$	.213	.266	.320	.372	.426	.479	.530	.585	.640	.745	.850	.955	1.07	1.18	1.28	1.49	1.70	2.13	2.56	2.98
$\frac{3}{16}$	.319	.399	.480	.558	.639	.718	.790	.878	.960	1.12	1.28	1.43	1.60	1.76	1.92	2.24	2.55	3.20	3.83	4.47
$\frac{1}{4}$	.425	.533	.640	.743	.852	.958	1.06	1.17	1.28	1.49	1.70	1.91	2.13	2.34	2.56	2.98	3.40	4.26	5.11	5.96
$\frac{5}{16}$	.531	.665	.800	.929	1.06	1.20	1.33	1.46	1.60	1.86	2.13	2.39	2.66	2.92	3.19	3.72	4.25	5.32	6.38	7.44
$\frac{3}{8}$	.638	.798	.960	1.12	1.28	1.43	1.59	1.75	1.91	2.23	2.55	2.87	3.20	3.51	3.83	4.46	5.10	6.40	7.66	8.92
$\frac{7}{16}$	.744	.931	1.12	1.30	1.49	1.67	1.86	2.05	2.23	2.60	2.98	3.35	3.72	4.09	4.46	5.21	5.95	7.44	8.92	10.46
$\frac{1}{2}$	.....	1.07	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.98	3.40	3.83	4.26	4.68	5.10	5.96	6.80	8.52	10.20	11.98
$\frac{5}{8}$	.....	1.20	1.44	1.67	1.91	2.15	2.39	2.63	2.87	3.35	3.83	4.30	4.78	5.26	5.74	6.69	7.65	9.56	11.50	13.46
$\frac{3}{4}$	.....	.....	1.60	1.86	2.12	2.39	2.66	2.92	3.19	3.72	4.26	4.79	5.32	5.86	6.39	7.44	8.52	10.64	12.78	14.90
$1\frac{1}{8}$	.....	.....	1.76	2.04	2.34	2.63	2.92	3.22	3.51	4.09	4.68	5.26	5.84	6.43	7.01	8.18	9.35	11.70	14.00	16.40
$1\frac{1}{4}$	.....	.....	.....	2.23	2.55	2.86	3.19	3.50	3.83	4.46	5.10	5.74	6.40	7.02	7.65	8.92	10.20	12.80	15.30	17.90
$1\frac{3}{8}$	.....	.....	.....	2.41	2.76	3.11	3.45	3.80	4.14	4.83	5.53	6.22	6.91	7.60	8.29	9.67	11.10	13.80	16.60	19.30
$1\frac{1}{2}$	.....	.....	.....	.....	2.98	3.34	3.72	4.09	4.46	5.21	5.96	6.70	7.46	8.19	8.94	10.42	11.92	14.87	17.88	20.86
$1\frac{5}{8}$	.....	.....	.....	.....	.....	3.19	3.59	3.98	4.38	5.58	6.38	7.17	7.97	8.77	9.56	11.20	12.80	15.90	19.10	22.40
1	.....	.....	.....	.....	.....	3.82	4.25	4.68	5.10	5.96	6.80	7.66	8.52	9.36	10.20	11.92	13.60	17.04	20.40	23.80
$1\frac{1}{8}$	.....	.....	.....	.....	.....	.....	4.78	5.27	5.74	6.71	7.65	8.61	9.59	10.54	11.48	13.41	15.30	19.17	22.95	26.80
$1\frac{3}{8}$	.....	.....	.....	.....	.....	.....	.....	5.85	6.38	7.45	8.50	9.57	10.65	11.71	12.76	14.90	17.00	21.30	25.61	29.76
$1\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	7.02	7.67	8.94	10.20	11.49	12.78	14.04	15.30	17.88	20.40	25.56	30.60	35.76

Index to Tables and Data Appears on Pages 1079 and 1080

Weight in Pounds of Sheet and Bar Aluminum, Brass and Steel

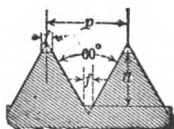
THICKNESS OR DIAM. IN INCH		SHEETS PER SQUARE FOOT			SQUARE BARS, ONE FOOT LONG			ROUND BARS, ONE FOOT LONG		
Frac- tion	Dec.	Alum.	Brass	Steel	Alum.	Brass	Steel	Alum.	Brass	Steel
$\frac{1}{16}$	.0625	.869	2.77	2.52	.004	.014	.013	.003	.011	.010
$\frac{1}{8}$	.125	1.739	5.55	5.10	.018	.057	.053	.014	.047	.042
$\frac{3}{16}$	.1875	2.609	8.32	7.65	.041	.131	.119	.032	.102	.094
$\frac{1}{4}$	.2500	3.479	11.10	10.20	.072	.230	.212	.057	.182	.167
$\frac{5}{16}$	.3125	4.348	13.87	12.75	.114	.380	.333	.089	.284	.261
$\frac{3}{8}$	.3750	5.218	16.64	15.30	.163	.520	.478	.128	.408	.375
$\frac{7}{16}$	.4375	6.088	19.42	17.85	.222	.708	.651	.174	.555	.511
$\frac{1}{2}$	.5000	6.958	22.20	20.40	.290	.925	.850	.227	.724	.667
$\frac{9}{16}$	.5625	7.827	24.97	22.95	.367	1.171	1.076	.288	.919	.845
$\frac{5}{8}$	.6250	8.697	27.74	25.50	.453	1.445	1.328	.356	1.136	1.043
$\frac{11}{16}$	.6875	9.567	30.52	28.05	.548	1.748	1.608	.430	1.372	1.262
$\frac{3}{4}$	.7500	10.436	33.29	30.60	.652	2.080	1.913	.516	1.646	1.502
$\frac{13}{16}$	.8125	11.306	36.07	33.15	.766	2.445	2.245	.601	1.917	1.763
$\frac{7}{8}$	.8750	12.175	38.84	35.70	.888	2.833	2.603	.697	2.223	2.044
$1\frac{1}{16}$	.9375	13.045	41.61	38.25	1.019	3.251	2.989	.800	2.552	2.347
1	1.0000	13.915	44.39	40.80	1.159	3.697	3.400	.911	2.906	2.670
$1\frac{1}{16}$	1.0625	14.784	47.16	43.35	1.309	4.176	3.838	1.028	3.279	3.014
$1\frac{1}{8}$	1.125	15.654	49.94	45.90	1.467	4.630	4.303	1.152	3.675	3.379
$1\frac{1}{16}$	1.1875	16.524	52.71	48.45	1.635	5.216	4.795	1.284	4.096	3.766
$1\frac{1}{4}$	1.2500	17.394	55.48	51.00	1.812	5.780	5.312	1.423	4.539	4.173
$1\frac{1}{8}$	1.3125	18.263	58.26	53.55	1.997	6.370	5.857	1.569	5.003	4.600
$1\frac{1}{2}$	1.3750	19.133	61.04	56.10	2.192	6.992	6.428	1.722	5.491	5.049
$1\frac{3}{8}$	1.4375	20.002	63.81	58.65	2.396	7.644	7.026	1.882	6.002	5.518
$1\frac{1}{2}$	1.5000	20.872	66.58	61.20	2.609	8.322	7.650	2.049	6.536	6.008
$1\frac{5}{8}$	1.5625	21.741	69.35	63.75	2.831	9.030	8.301	2.223	7.091	6.520
$1\frac{3}{4}$	1.6250	22.611	72.13	66.30	3.062	9.768	8.978	2.405	7.672	7.051
$1\frac{7}{8}$	1.6875	23.481	74.90	68.85	3.302	10.53	9.682	2.593	8.271	7.604
$2\frac{1}{16}$	1.7500	24.350	77.67	71.40	3.550	11.32	10.41	2.789	8.896	8.178
$2\frac{1}{8}$	1.8125	25.250	80.54	73.95	3.810	12.15	11.17	2.992	9.544	8.773
$2\frac{1}{4}$	1.8750	26.090	83.22	76.50	4.075	13.00	11.95	3.202	10.21	9.388
$2\frac{1}{8}$	1.9375	26.960	86.00	79.05	4.352	13.88	12.76	3.417	10.90	10.02
2	2.0000	27.829	88.77	81.60	4.638	14.79	13.60	3.642	11.62	10.68

Weight of Aluminum, Iron, Copper, Brass and Lead Balls

Dia. In.	Alum., Lbs.	Iron, Lbs.	Copper, Lbs.	Brass, Lbs.	Lead, Lbs.	Dia., In.	Alum. Lbs.	Iron, Lbs.	Copper Lbs.	Brass, Lbs.	Lead, Lbs.
1	.045	.136	.166	.158	.214	7	15.58	46.76	57.1	54.5	73.2
$1\frac{1}{8}$	.153	.46	.562	.537	.727	$7\frac{1}{2}$	19.17	57.52	70.0	67.11	90.0
2	.363	1.09	1.3	1.25	1.7	8	23.27	69.81	85.2	81.4	110.1
$2\frac{1}{8}$	.710	2.13	2.60	2.50	3.35	$8\frac{1}{2}$	27.91	83.73	102.3	100.0	132.3
3	1.22	3.68	4.5	4.3	5.8	9	33.10	99.4	121.3	115.9	156.7
$3\frac{1}{8}$	1.94	5.84	7.14	6.82	9.23	$9\frac{1}{2}$	38.90	116.9	143.0	136.4	184.7
4	2.90	8.72	10.7	10.2	13.8	10	45.45	136.35	166.4	159.0	215.0
$4\frac{1}{8}$	3.13	12.42	15.25	14.5	19.6	$10\frac{1}{2}$	52.60	157.84	193.0	184.0	250.9
5	5.68	17.04	20.8	19.9	26.9	11	60.49	181.48	221.8	211.8	286.7
$5\frac{1}{8}$	7.56	22.68	27.74	26.47	36.0	$11\frac{1}{2}$	69.12	207.37	253.5	242.0	327.7
6	9.81	29.45	35.9	34.3	46.4	12	78.54	235.62	288.1	275.0	372.2
$6\frac{1}{8}$	12.48	37.44	45.76	43.67	59.13						

Index to Tables and Data Appears on Pages 1079 and 1080

UNITED STATES 60° SCREW THREAD



$$\text{Formula} \left\{ \begin{array}{l} p = \text{pitch} = \frac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .6495 \\ f = \text{flat} = \frac{p}{8} \end{array} \right.$$

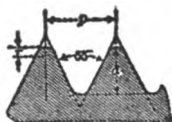
Diameter of Screw	Threads to Inch	Diameter at Root of Thread	Width of Flat
$\frac{1}{8}$	20	.185	.0063
$\frac{9}{16}$	18	.2403	.0069
$\frac{3}{8}$	16	.2936	.0078
$\frac{7}{16}$	14	.3447	.0089
$\frac{1}{2}$	13	.4001	.0096
$\frac{5}{8}$	12	.4542	.0104
$\frac{3}{4}$	11	.5069	.0114
$\frac{7}{8}$	10	.6201	.0125
1	9	.7307	.0139
$1\frac{1}{8}$	8	.8376	.0156
$1\frac{1}{4}$	7	.9394	.0179
$1\frac{3}{8}$	7	1.0644	.0179
$1\frac{1}{2}$	6	1.1585	.0208
$1\frac{3}{4}$	6	1.2835	.0208
$1\frac{7}{8}$	$5\frac{1}{2}$	1.3888	.0227
2	5	1.4902	.0250
$2\frac{1}{8}$	5	1.6152	.0250
$2\frac{1}{4}$	$4\frac{1}{2}$	1.7113	.0278
$2\frac{3}{8}$	$4\frac{1}{2}$	1.9613	.0278
$2\frac{1}{2}$	4	2.1752	.0313
$2\frac{3}{4}$	4	2.4252	.0313
3	$3\frac{1}{2}$	2.6288	.0357
$3\frac{1}{8}$	$3\frac{1}{2}$	2.8788	.0357
$3\frac{1}{4}$	$3\frac{1}{4}$	3.1003	.0385
$3\frac{3}{8}$	3	3.3170	.0417
4	3	3.5670	.0418
$4\frac{1}{8}$	$2\frac{3}{4}$	3.7982	.0455
$4\frac{1}{4}$	$2\frac{3}{4}$	4.0276	.0455
$4\frac{3}{8}$	$2\frac{3}{4}$	4.2551	.0476
5	$2\frac{1}{2}$	4.4804	.0500
$5\frac{1}{8}$	$2\frac{1}{2}$	4.7304	.0500
$5\frac{1}{4}$	$2\frac{1}{2}$	4.9530	.0526
$5\frac{3}{8}$	$2\frac{1}{2}$	5.2030	.0526
6	$2\frac{1}{2}$	5.4226	.0556

STANDARD PROPORTIONS FOR MACHINE SCREWS

The report of the committee on standard proportions for machine screws of the American Society of Mechanical Engineers is published in the October, 1906, proceedings of the society. The report is substantially in agreement with the recommendations adopted at the joint meeting held in New York, April 11, 1904.

The committee believes the following combined details to be essential in establishing and maintaining a standard for the diameters, threads and heads of machine screws, including, as it does, diameters, threads and limits for the taps which are to be used in connection therewith: (a) form of thread, (b) diameters, (c) number of threads per inch, (d) standard reference thread gauges, basic and for screws and taps, (e) working gauges for screws and taps, (f) limits of variation, measured in the angle of the thread, (g) limits of variation in external diameter, (h) limits of variation in the pitch of the thread screws and taps, (k) proportions of the heads.

Whitworth Standard Thread



Formula

$$\begin{cases} p = \text{pitch} = \frac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .64033 \\ r = \text{radius} = p \times .1373 \end{cases}$$

Full Diameter	No. of Threads per Inch	Pitch	Standard Depth of Thread	Effective Diameter	Core Diameter	Cross Sectional Area at Bottom of Thread
$\frac{1}{2}$ (.25)	20	.0500	.0320	.2180	.1860	.0272
$\frac{3}{8}$ (.3125)	18	.0556	.0356	.2769	.2414	.0458
$\frac{1}{2}$ (.375)	16	.0625	.0400	.3350	.2950	.0683
$\frac{3}{4}$ (.4375)	14	.0714	.0457	.3918	.3460	.0940
1 (.5)	12	.0833	.0534	.4466	.3933	.1215
$1\frac{1}{8}$ (.5625)	12	.0833	.0534	.5091	.4558	.1632
$1\frac{1}{4}$ (.625)	11	.0909	.0582	.5668	.5086	.2032
$1\frac{3}{8}$ (.6875)	11	.0909	.0582	.6293	.5711	.2562
$1\frac{1}{2}$ (.75)	10	.1000	.0640	.6860	.6219	.3038
$1\frac{3}{4}$ (.8125)	10	.1000	.0640	.7485	.6844	.3679
2 (.875)	9	.1111	.0711	.8039	.7327	.4216
$2\frac{1}{8}$	8	.1250	.0800	.9200	.8399	.5540
$2\frac{1}{4}$ (1.125)	7	.1429	.0915	1.0335	.9420	.6969
$2\frac{3}{8}$ (1.25)	7	.1429	.0915	1.1585	1.0670	.8942
$2\frac{1}{2}$ (1.375)	6	.1667	.1067	1.2683	1.1616	1.0597
$2\frac{3}{4}$ (1.5)	6	.1667	.1067	1.3933	1.2866	1.3001
3 (1.625)	5	.2000	.1281	1.4969	1.3689	1.4718
$3\frac{1}{8}$ (1.75)	5	.2000	.1281	1.6219	1.4939	1.7528
$3\frac{1}{4}$	4 $\frac{1}{2}$	.2222	.1423	1.8577	1.7154	2.3111
$3\frac{3}{8}$ (2.25)	4	.2500	.1601	2.0899	1.9298	2.9249
$3\frac{1}{2}$ (2.5)	4	.2500	.1601	2.3399	2.1798	3.7318
$3\frac{3}{4}$ (2.75)	3 $\frac{1}{2}$	.2857	.1830	2.5670	2.3841	4.4641
4	3 $\frac{1}{2}$	.2857	.1830	2.8170	2.6341	5.4496
$4\frac{1}{8}$ (3.25)	3 $\frac{1}{2}$	.3077	.1970	3.0530	2.8560	6.4063
$4\frac{1}{4}$ (3.50)	3 $\frac{1}{2}$	.3077	.1970	3.3030	3.1060	7.5769
$4\frac{3}{8}$ (3.75)	3	.3333	.2134	3.5366	3.231	8.6732
$4\frac{1}{2}$	3	.3333	.2134	3.7866	3.5731	10.0272
$4\frac{3}{4}$ (4.50)	2 $\frac{1}{2}$	.3478	.2227	4.2773	4.0546	12.9118
5	2 $\frac{1}{2}$	.3636	.2328	4.7672	4.5343	16.1477
$5\frac{1}{8}$ (5.50)	2 $\frac{1}{2}$	.3810	.2439	5.2561	5.0121	19.7301
$5\frac{1}{4}$	2 $\frac{1}{2}$	.4000	.2561	5.7439	5.4877	23.6521

International (Metric System) Standard 60° Thread

Diameter of Screw	Pitch	Diameter at Root of Thread	Width of Flat at Top and Bottom of Thread
<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>
3	.5	2.35	.06
4	.75	3.03	.09
5	.75	4.03	.09
6	1.0	4.70	.13
7	1.0	5.70	.13
8	1.0	6.70	.13
8	1.25	6.38	.16
9	1.0	7.70	.13
9	1.25	7.38	.16
10	1.5	8.05	.19
11	1.5	9.05	.19
12	1.5	10.05	.19
12	1.75	9.73	.22
14	2.0	11.40	.25
16	2.0	13.40	.25
18	2.5	14.75	.31
20	2.5	16.75	.31
22	2.5	18.75	.31
22	3.0	18.10	.38
24	3.0	20.10	.38
25	3.0	22.10	.38
27	3.0	23.10	.38
28	3.0	24.10	.38
30	3.5	25.45	.44
32	3.5	27.45	.44
33	3.5	28.45	.44
34	3.5	29.45	.44
36	4.0	30.80	.5
38	4.0	32.80	.5
39	4.0	33.80	.5
40	4.0	34.80	.5
42	4.5	36.15	.56
44	4.5	38.15	.56
45	4.5	39.15	.56
46	4.5	40.15	.56
48	5.0	41.51	.63
50	5.0	43.51	.63
52	5.0	45.51	.63

NOTE.—This thread is largely used by Italian constructors.

Drill Sizes for S. A. E. Threads

Size of Tap	Size of Drill
$\frac{1}{8}$ inch x 28 threads	$\frac{7}{32}$ inch
$\frac{5}{16}$ " x 24 "	$\frac{17}{64}$ "
$\frac{3}{8}$ " x 24 "	$\frac{21}{64}$ "
$\frac{7}{16}$ " x 20 "	$\frac{9}{16}$ "
$\frac{1}{2}$ " x 20 "	$\frac{7}{16}$ "
$\frac{9}{16}$ " x 18 "	$\frac{1}{2}$ "
$\frac{5}{8}$ " x 18 "	$\frac{9}{16}$ "
$1\frac{1}{16}$ " x 16 "	$\frac{23}{64}$ "
$\frac{3}{4}$ " x 16 "	$\frac{43}{64}$ "
$\frac{7}{8}$ " x 14 "	$\frac{25}{32}$ "
1 " x 14 "	$\frac{29}{32}$ "
$1\frac{1}{8}$ " x 12 "	$1\frac{1}{64}$ "
$1\frac{1}{4}$ " x 12 "	$1\frac{9}{64}$ "
$1\frac{3}{8}$ " x 12 "	$1\frac{17}{64}$ "
$1\frac{1}{2}$ " x 12 "	$1\frac{25}{64}$ "

The above tap drills allow a thread within 1-64 in. of full thread.

Index to Tables and Data Appears on Pages 1079 and 1080

Drill Sizes for Standard Threads

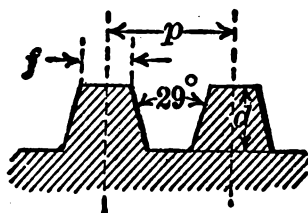
These sizes give an allowance above the bottom of thread on sizes $\frac{1}{4}$ to 2; varying respectively as follows: for "V" Threads, .010" to .055"; for U. S. S. and Whitworth threads .005" to .027".

These are found by adding to the size at bottom of thread $\frac{1}{4}$ of the pitch for "V" threads, and $\frac{1}{8}$ of the pitch for U. S. S. and Whitworth, the pitch being equal to $1" \div \text{No. of threads per } 1"$.

In practice it is better to use a larger drill if the exact size called for cannot be had.

Size Screw	No. of Threads	SIZE OF DRILL			Size Screw	No. of Threads	SIZE OF DRILL		
		U. S. S.	" V "	W.			U. S. S.	" V "	W.
$\frac{1}{4}$	24	.201	.196	.202	$1\frac{1}{16}$	9	.808	.790	.810
$\frac{1}{4}$	20	.191	.184	.192	1	8	.854	.832	.856
$\frac{3}{8}$	18	.248	.239	.249	$1\frac{1}{8}$	8	.917	.894	.919
$\frac{3}{8}$	16	.302	.293	.303	$1\frac{1}{8}$	7	.957	.932	.960
$\frac{7}{8}$	14	.354	.345	.355	$1\frac{1}{4}$	7	1.082	1.057	1.085
$\frac{1}{2}$	13	.409	.399	.410	$1\frac{3}{8}$	6	1.179	1.144	1.182
$\frac{1}{2}$	12	.402	.391	.403	$1\frac{1}{2}$	6	1.304	1.269	1.307
$\frac{9}{16}$	12	.465	.453	.466	$1\frac{3}{8}$	$5\frac{1}{2}$	1.412	1.372	1.416
$\frac{5}{8}$	11	.518	.506	.520	$1\frac{5}{8}$	5	1.390	1.347	1.394
$1\frac{1}{16}$	11	.581	.568	.583	$1\frac{3}{4}$	5	1.515	1.472	1.519
$\frac{3}{4}$	10	.632	.618	.634	$1\frac{7}{8}$	5	1.640	1.597	1.644
$1\frac{1}{8}$	10	.695	.680	.697	$1\frac{7}{8}$	$4\frac{1}{2}$	1.614	1.566	1.619
$\frac{7}{8}$	9	.745	.728	.747	2	$4\frac{1}{2}$	1.739	1.691	1.744

The Acme Standard Thread



The Acme Standard Thread is a little shallower than the Worm Thread, but the same depth as the square thread and much stronger than the latter.

The various parts are obtained as follows:

$$\text{Width of Point of Tool for Screw or Tap Thread} = \frac{.5707}{\text{No. of Threads per in.}} - .0052$$

$$\text{Width of Screw or Nut Thread} = \frac{.3707}{\text{No. of Threads per in.}}$$

$$\begin{aligned} \text{Diameter of Tap} &= \text{Diameter of Screw} + .020 \\ \text{Diameter of Tap or Screw at Root} &= \text{Diameter} \end{aligned}$$

$$\text{of Screw} - \left\{ \frac{1}{\text{No. of Linear Threads per in.}} + .020 \right\}$$

$$\text{Depth of Thread} = \frac{1}{2 \times \text{No. of Threads per in.}} + .010$$

(Continued on following page)

TABLE OF ACME THREAD PARTS

No. of Threads per Inch	Depth of Thread	Width at Top of Thread	Width at Bottom of Thread	Space at Top of Thread	Thickness at Root of Thread
1	.5100	.3707	.3655	.6293	.6345
1½	.3850	.2780	.2728	.4720	.4772
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681

CONSTANTS FOR FINDING DIAMETER AT BOTTOM OF ACME THREAD

Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant	Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant
64	.02029	.02706	16	.08118	.10825
60	.02165	.02887	14	.09278	.12357
56	.02319	.03093	13	.09992	.13323
50	.02598	.03464	12	.10825	.14433
48	.02706	.03608	11	.11809	.15745
44	.02952	.03936	10	.12990	.17320
40	.03247	.04330	9	.14433	.19244
36	.03608	.04811	8	.16237	.21650
32	.04059	.05412	7	.18555	.24742
30	.04330	.05773	6	.21650	.28866
28	.04639	.06185	5½	.23618	.31490
26	.04996	.06661	5	.25980	.34650
24	.05412	.07216	4½	.28866	.38488
22	.05904	.07872	4	.32475	.43300
20	.06495	.08660	3½	.37114	.49485
18	.07216	.09622	3	.43333	.57733

C = Constant for number of threads per inch.

D = Outside diameter.

D¹ = Diameter at bottom of thread.

$$D^1 = D - C.$$

EXAMPLE.—Given outside diameter of U. S. S. screw thread, 2 inches, 4½ threads per inch; find diameter at bottom of thread. D = 2 inches; for 4½ threads U. S. S., constant, C = .2886; then diameter at bottom of thread, D¹ = 2 - .2886 = 1.7114 inches.

NOTE:—The above formula and constants are based on a perfectly sharp thread in considering V threads. With the usual blunted threads, therefore, the actual bottom diameters are a trifle larger for bolts and a trifle smaller for nuts than the diameters obtained with the formula and V-thread constants.

Approximate Capacities in Liquid Gallons of Cylindrical Tanks

1	2	3	4	5	6	7	8	9	10	Gallons	Gal's per Inch
5x12	6x18 7x12	6x24 7x18 8x15 9x12	6x36 7x24 8x18 9x15	6x42 7x30 8x24 9x18	7x36 8x30 9x24 10x20	7x42 8x36 9x30 10x24 12x16	7x48 8x42 9x34 10x26 12x18	8x45 9x36 10x28 12x20	8x48 9x40 10x32 12x24	6" diam'r 7" " 8" " 9" " 10" " 12" "	.122 .165 .217 .275 .340 .486

10	15	20	25	30	35	40	45	50	Gallons	Gal's per Inch
8x48 9x40 10x32 12x24 14x18	10x48 12x34 14x24 16x18	12x42 14x30 16x24	12x50 14x38 16x30	12x60 14x44 16x36	14x52 16x42	14x60 16x48	16x54	16x60	8" diam'r 9" " 10" " 12" " 14" " 16" "	.217 .275 .340 .486 .666 .870

Areas of Small Circles

Figured from diameters in decimal fractions of 1 inch (or other unit of linear measurement).

Diameter	SECOND DECIMAL IN LENGTH OF DIAMETER									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0	.000078	.00031	.0007	.00125	.00196	.00283	.00385	.00503	.00636
.1	.0078	.0095	.0113	.0133	.0154	.0177	.0201	.0227	.0255	.0283
.2	.0314	.03464	.038	.0415	.0452	.0491	.0531	.0572	.0616	.066
.3	.0706	.0755	.0804	.0855	.0908	.0962	.1018	.1075	.1134	.1195
.4	.1256	.132	.1385	.1452	.1520	.1590	.1662	.1735	.181	.1886
.5	.1963	.2043	.2124	.2206	.2290	.2376	.2463	.2552	.2642	.2734
.6	.2827	.2922	.3014	.3117	.3217	.3318	.3421	.3526	.3632	.3739
.7	.3848	.3959	.4071	.4185	.4301	.4418	.4536	.4657	.4778	.4902
.8	.5026	.5153	.5281	.5411	.5542	.5674	.5809	.5945	.6082	.6221
.9	.6362	.6504	.6648	.6793	.694	.7088	.7238	.739	.7543	.7698

Example: What is area of circle with diameter 0.45 inch (or centimeter). Follow line .4 column .05. Answer: .1590 square inch (or square centimeter).

Circumferences and Areas of Circles

Diameters from 1-64 inch to 63 inches

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
		.00019	2	6.2832	3.1416	5	15.708	19.635
$\frac{1}{4}$	.04909	.00077	$\frac{1}{2}$	6.4795	3.3410	$\frac{1}{2}$	15.904	20.129
$\frac{3}{4}$	.09818	.00173	$\frac{3}{4}$	6.6759	3.5466	$\frac{3}{4}$	16.101	20.629
$\frac{1}{2}$	.14726		$\frac{1}{2}$	6.8722	3.7583	$\frac{1}{2}$	16.297	21.135
$\frac{1}{2}$	.19635	.00307	$\frac{1}{2}$	7.0686	3.9761	$\frac{1}{2}$	16.493	21.648
$\frac{1}{2}$	.29452	.00690	$\frac{1}{2}$	7.2649	4.2000	$\frac{1}{2}$	16.690	22.166
$\frac{1}{2}$	.39270	.01227	$\frac{1}{2}$	7.4613	4.4301	$\frac{1}{2}$	16.886	22.691
$\frac{1}{2}$	.49087	.01917	$\frac{1}{2}$	7.6576	4.6664	$\frac{1}{2}$	17.082	23.221
$\frac{1}{2}$	.58905	.02761	$\frac{1}{2}$	7.8540	4.9087	$\frac{1}{2}$	17.279	23.758
$\frac{1}{2}$	.68722	.03758	$\frac{1}{2}$	8.0503	5.1572	$\frac{1}{2}$	17.475	24.301
$\frac{1}{2}$	.78540	.04909	$\frac{1}{2}$	8.2467	5.4119	$\frac{1}{2}$	17.671	24.850
$\frac{1}{2}$	.88357	.06213	$\frac{1}{2}$	8.4430	5.6727	$\frac{1}{2}$	17.868	25.406
$\frac{1}{2}$	.98175	.07670	$\frac{1}{2}$	8.6394	5.9396	$\frac{1}{2}$	18.064	25.967
$\frac{1}{2}$	1.0799	.09281	$\frac{1}{2}$	8.8357	6.2126	$\frac{1}{2}$	18.261	26.535
$\frac{1}{2}$	1.1781	.11045	$\frac{1}{2}$	9.0321	6.4918	$\frac{1}{2}$	18.457	27.109
$\frac{1}{2}$	1.2763	.12962	$\frac{1}{2}$	9.2284	6.7771	$\frac{1}{2}$	18.653	27.688
$\frac{1}{2}$	1.3744	.15033	$\frac{1}{2}$	9.4284	7.0686	$\frac{1}{2}$	18.850	28.274
$\frac{1}{2}$	1.4726	.17257	$\frac{1}{2}$	9.6211	7.3662	$\frac{1}{2}$	19.046	28.865
$\frac{1}{2}$	1.5708	.19635	$\frac{1}{2}$	9.8175	7.6699	$\frac{1}{2}$	19.242	29.465
$\frac{1}{2}$	1.6690	.22166	$\frac{1}{2}$	10.014	7.9798	$\frac{1}{2}$	19.438	30.070
$\frac{1}{2}$	1.7671	.24850	$\frac{1}{2}$	10.210	8.2958	$\frac{1}{2}$	19.635	30.680
$\frac{1}{2}$	1.8653	.27688	$\frac{1}{2}$	10.407	8.6179	$\frac{1}{2}$	19.831	31.291
$\frac{1}{2}$	1.9635	.30680	$\frac{1}{2}$	10.603	8.9462	$\frac{1}{2}$	20.028	31.919
$\frac{1}{2}$	2.0617	.33824	$\frac{1}{2}$	10.799	9.2806	$\frac{1}{2}$	20.224	32.552
$\frac{1}{2}$	2.1598	.37122	$\frac{1}{2}$	10.996	9.6211	$\frac{1}{2}$	20.420	33.183
$\frac{1}{2}$	2.2580	.40574	$\frac{1}{2}$	11.192	9.9678	$\frac{1}{2}$	20.617	33.818
$\frac{1}{2}$	2.3562	.44179	$\frac{1}{2}$	11.388	10.321	$\frac{1}{2}$	20.813	34.452
$\frac{1}{2}$	2.4544	.47937	$\frac{1}{2}$	11.585	10.680	$\frac{1}{2}$	21.009	35.085
$\frac{1}{2}$	2.5525	.51849	$\frac{1}{2}$	11.781	11.045	$\frac{1}{2}$	21.206	35.718
$\frac{1}{2}$	2.6507	.55914	$\frac{1}{2}$	11.977	11.416	$\frac{1}{2}$	21.402	36.352
$\frac{1}{2}$	2.7489	.60132	$\frac{1}{2}$	12.174	11.793	$\frac{1}{2}$	21.598	36.985
$\frac{1}{2}$	2.8471	.64504	$\frac{1}{2}$	12.370	12.177	$\frac{1}{2}$	21.794	37.618
$\frac{1}{2}$	2.9452	.69029	$\frac{1}{2}$	12.566	12.566	$\frac{1}{2}$	21.991	38.251
$\frac{1}{2}$	3.0434	.73708	$\frac{1}{2}$	12.763	12.962	$\frac{1}{2}$	22.187	38.884
$\frac{1}{2}$	3.1416	.78540	$\frac{1}{2}$	12.959	13.364	$\frac{1}{2}$	22.384	39.517
$\frac{1}{2}$	3.3379	.8866	$\frac{1}{2}$	13.155	13.772	$\frac{1}{2}$	22.580	40.150
$\frac{1}{2}$	3.5343	.9940	$\frac{1}{2}$	13.352	14.186	$\frac{1}{2}$	22.776	40.783
$\frac{1}{2}$	3.7306	1.1075	$\frac{1}{2}$	13.548	14.607	$\frac{1}{2}$	22.972	41.416
$\frac{1}{2}$	3.9270	1.2272	$\frac{1}{2}$	13.744	15.033	$\frac{1}{2}$	23.168	42.049
$\frac{1}{2}$	4.1233	1.3530	$\frac{1}{2}$	13.941	15.466	$\frac{1}{2}$	23.364	42.682
$\frac{1}{2}$	4.3197	1.4849	$\frac{1}{2}$	14.137	15.904	$\frac{1}{2}$	23.560	43.315
$\frac{1}{2}$	4.5160	1.6230	$\frac{1}{2}$	14.334	16.349	$\frac{1}{2}$	23.756	43.948
$\frac{1}{2}$	4.7124	1.7671	$\frac{1}{2}$	14.530	16.800	$\frac{1}{2}$	23.952	44.581
$\frac{1}{2}$	4.9087	1.9175	$\frac{1}{2}$	14.726	17.257	$\frac{1}{2}$	24.148	45.214
$\frac{1}{2}$	5.1051	2.0739	$\frac{1}{2}$	14.923	17.728	$\frac{1}{2}$	24.344	45.847
$\frac{1}{2}$	5.3014	2.2365	$\frac{1}{2}$	15.119	18.190	$\frac{1}{2}$	24.540	46.480
$\frac{1}{2}$	5.4978	2.4053	$\frac{1}{2}$	15.315	18.665	$\frac{1}{2}$	24.736	47.113
$\frac{1}{2}$	5.6941	2.5802	$\frac{1}{2}$	15.512	19.147	$\frac{1}{2}$	24.932	47.746
$\frac{1}{2}$	5.8905	2.7612	$\frac{1}{2}$			$\frac{1}{2}$	25.128	48.379
$\frac{1}{2}$	6.0868	2.9483	$\frac{1}{2}$			$\frac{1}{2}$	25.324	49.012

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Circumferences and Areas of Circles—(Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
10	31.416	78.540	15 $\frac{1}{2}$	49.480	194.83	21 $\frac{1}{2}$	68.330	371.54
$\frac{1}{2}$	31.809	80.516	$\frac{1}{2}$	49.873	197.93	$\frac{1}{2}$	68.722	375.83
$\frac{1}{2}$	32.201	82.516	16	50.265	201.06	22 $\frac{1}{2}$	69.115	380.13
$\frac{1}{2}$	32.594	84.541	$\frac{1}{2}$	50.658	204.22	$\frac{1}{2}$	69.508	384.46
$\frac{1}{2}$	32.987	86.590	$\frac{1}{2}$	51.051	207.39	$\frac{1}{2}$	69.900	388.82
$\frac{1}{2}$	33.379	88.664	$\frac{1}{2}$	51.444	210.60	$\frac{1}{2}$	70.293	393.20
$\frac{1}{2}$	33.772	90.763	$\frac{1}{2}$	51.836	213.82	$\frac{1}{2}$	70.686	397.61
$\frac{1}{2}$	34.165	92.886	$\frac{1}{2}$	52.229	217.08	$\frac{1}{2}$	71.079	402.04
11	34.558	95.033	$\frac{1}{2}$	52.622	220.35	$\frac{1}{2}$	71.471	406.49
$\frac{1}{2}$	34.950	97.205	$\frac{1}{2}$	53.014	223.65	$\frac{1}{2}$	71.864	410.97
$\frac{1}{2}$	35.343	99.402	17	53.407	226.98	23 $\frac{1}{2}$	72.257	415.48
$\frac{1}{2}$	35.736	101.62	$\frac{1}{2}$	53.800	230.33	$\frac{1}{2}$	72.649	420.00
$\frac{1}{2}$	36.128	103.87	$\frac{1}{2}$	54.192	233.71	$\frac{1}{2}$	73.042	424.56
$\frac{1}{2}$	36.521	106.14	$\frac{1}{2}$	54.585	237.10	$\frac{1}{2}$	73.435	429.13
$\frac{1}{2}$	36.914	108.43	$\frac{1}{2}$	54.978	240.53	$\frac{1}{2}$	73.827	433.74
$\frac{1}{2}$	37.306	110.75	$\frac{1}{2}$	55.371	243.98	$\frac{1}{2}$	74.220	438.36
12	37.699	113.10	$\frac{1}{2}$	55.763	247.45	$\frac{1}{2}$	74.613	443.01
$\frac{1}{2}$	38.092	115.47	$\frac{1}{2}$	56.156	250.95	$\frac{1}{2}$	75.006	447.69
$\frac{1}{2}$	38.485	117.86	18	56.549	254.47	24 $\frac{1}{2}$	75.398	452.39
$\frac{1}{2}$	38.877	120.28	$\frac{1}{2}$	56.941	258.02	$\frac{1}{2}$	75.791	457.11
$\frac{1}{2}$	39.270	122.72	$\frac{1}{2}$	57.334	261.59	$\frac{1}{2}$	76.184	461.86
$\frac{1}{2}$	39.663	125.19	$\frac{1}{2}$	57.727	265.18	$\frac{1}{2}$	76.576	466.64
$\frac{1}{2}$	40.055	127.68	$\frac{1}{2}$	58.119	268.80	$\frac{1}{2}$	76.969	471.44
13	40.448	130.19	$\frac{1}{2}$	58.512	272.45	$\frac{1}{2}$	77.362	476.26
$\frac{1}{2}$	40.841	132.73	$\frac{1}{2}$	58.905	276.12	$\frac{1}{2}$	77.754	481.11
$\frac{1}{2}$	41.233	135.30	19	59.298	279.81	$\frac{1}{2}$	78.147	485.98
$\frac{1}{2}$	41.626	137.89	$\frac{1}{2}$	59.690	283.53	25 $\frac{1}{2}$	78.540	490.87
$\frac{1}{2}$	42.019	140.50	$\frac{1}{2}$	60.083	287.27	$\frac{1}{2}$	78.933	495.79
$\frac{1}{2}$	42.412	143.14	$\frac{1}{2}$	60.476	291.04	$\frac{1}{2}$	79.325	500.74
$\frac{1}{2}$	42.804	145.80	$\frac{1}{2}$	60.868	294.83	$\frac{1}{2}$	79.718	505.71
$\frac{1}{2}$	43.197	148.49	$\frac{1}{2}$	61.261	298.65	$\frac{1}{2}$	80.111	510.71
14	43.590	151.20	$\frac{1}{2}$	61.654	302.49	$\frac{1}{2}$	80.503	515.72
$\frac{1}{2}$	43.982	153.94	$\frac{1}{2}$	62.046	306.35	$\frac{1}{2}$	80.896	520.77
$\frac{1}{2}$	44.375	156.70	20	62.439	310.24	$\frac{1}{2}$	81.289	525.84
$\frac{1}{2}$	44.768	159.48	$\frac{1}{2}$	62.832	314.16	26 $\frac{1}{2}$	81.681	530.93
$\frac{1}{2}$	45.160	162.30	$\frac{1}{2}$	63.225	318.10	$\frac{1}{2}$	82.074	536.05
$\frac{1}{2}$	45.553	165.13	$\frac{1}{2}$	63.617	322.06	$\frac{1}{2}$	82.467	541.19
$\frac{1}{2}$	45.946	167.99	$\frac{1}{2}$	64.010	326.05	$\frac{1}{2}$	82.860	546.35
$\frac{1}{2}$	46.338	170.87	$\frac{1}{2}$	64.403	330.06	$\frac{1}{2}$	83.252	551.55
$\frac{1}{2}$	46.731	173.78	$\frac{1}{2}$	64.795	334.10	$\frac{1}{2}$	83.645	556.76
15	47.124	176.71	$\frac{1}{2}$	65.188	338.16	$\frac{1}{2}$	84.038	562.00
$\frac{1}{2}$	47.517	179.67	$\frac{1}{2}$	65.581	342.25	$\frac{1}{2}$	84.430	567.27
$\frac{1}{2}$	47.909	182.65	21	65.973	346.36	27 $\frac{1}{2}$	84.823	572.56
$\frac{1}{2}$	48.302	185.66	$\frac{1}{2}$	66.366	350.50	$\frac{1}{2}$	85.216	577.87
$\frac{1}{2}$	48.695	188.69	$\frac{1}{2}$	66.759	354.66	$\frac{1}{2}$	85.608	583.21
$\frac{1}{2}$	49.087	191.75	$\frac{1}{2}$	67.152	358.84	$\frac{1}{2}$	86.001	588.57
			$\frac{1}{2}$	67.544	363.05	$\frac{1}{2}$	86.394	593.96
			$\frac{1}{2}$	67.937	367.28	$\frac{1}{2}$	86.786	599.37

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Circumferences and Areas of Circles (Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
27 $\frac{1}{2}$	87.179	604.81	33 $\frac{1}{2}$	105.636	888.00	39 $\frac{1}{2}$	124.486	1233.2
$\frac{1}{2}$	87.572	610.27	$\frac{1}{2}$	106.029	894.62	$\frac{1}{2}$	124.878	1241.0
28	87.965	615.75	$\frac{1}{2}$	106.421	901.26	$\frac{1}{2}$	125.271	1248.8
$\frac{1}{2}$	88.357	621.26	34	106.814	097.92	40	125.664	1256.6
$\frac{1}{2}$	88.750	626.80	$\frac{1}{2}$	107.207	914.61	$\frac{1}{2}$	126.056	1264.5
$\frac{1}{2}$	89.143	632.36	$\frac{1}{2}$	107.600	921.32	$\frac{1}{2}$	126.449	1272.4
$\frac{1}{2}$	89.535	637.94	$\frac{1}{2}$	107.992	928.06	$\frac{1}{2}$	126.842	1280.3
$\frac{1}{2}$	89.928	643.55	$\frac{1}{2}$	108.385	934.82	$\frac{1}{2}$	127.235	1288.2
$\frac{1}{2}$	90.321	649.18	$\frac{1}{2}$	108.778	941.61	$\frac{1}{2}$	127.627	1296.2
$\frac{1}{2}$	90.713	654.84	$\frac{1}{2}$	109.170	948.42	$\frac{1}{2}$	128.020	1304.2
29	91.106	660.52	$\frac{1}{2}$	109.563	955.25	$\frac{1}{2}$	128.413	1312.2
$\frac{1}{2}$	91.499	666.23	35	109.956	962.11	41	128.805	1320.3
$\frac{1}{2}$	91.892	671.96	$\frac{1}{2}$	110.348	969.00	$\frac{1}{2}$	129.198	1328.3
$\frac{1}{2}$	92.284	677.71	$\frac{1}{2}$	110.741	975.91	$\frac{1}{2}$	129.591	1336.4
$\frac{1}{2}$	92.677	683.49	$\frac{1}{2}$	111.134	982.84	$\frac{1}{2}$	129.983	1344.5
$\frac{1}{2}$	93.070	689.30	$\frac{1}{2}$	111.527	989.80	$\frac{1}{2}$	130.376	1352.7
$\frac{1}{2}$	93.462	695.13	$\frac{1}{2}$	111.919	996.78	$\frac{1}{2}$	130.769	1360.8
$\frac{1}{2}$	93.855	700.98	$\frac{1}{2}$	112.312	1003.8	$\frac{1}{2}$	131.161	1369.0
30	94.248	706.86	$\frac{1}{2}$	112.705	1010.8	$\frac{1}{2}$	131.554	1377.2
$\frac{1}{2}$	94.640	712.76	36	113.097	1017.9	42	131.947	1385.4
$\frac{1}{2}$	95.033	718.69	$\frac{1}{2}$	113.490	1025.0	$\frac{1}{2}$	132.340	1393.7
$\frac{1}{2}$	95.426	724.64	$\frac{1}{2}$	113.883	1032.1	$\frac{1}{2}$	132.732	1402.0
$\frac{1}{2}$	95.819	730.62	$\frac{1}{2}$	114.275	1039.2	$\frac{1}{2}$	133.125	1410.3
$\frac{1}{2}$	96.211	736.62	$\frac{1}{2}$	114.668	1046.3	$\frac{1}{2}$	133.518	1418.6
$\frac{1}{2}$	96.604	742.64	$\frac{1}{2}$	115.061	1053.5	$\frac{1}{2}$	133.910	1427.0
31	96.997	748.69	$\frac{1}{2}$	115.454	1060.7	$\frac{1}{2}$	134.303	1435.4
$\frac{1}{2}$	97.389	754.77	$\frac{1}{2}$	115.846	1068.0	$\frac{1}{2}$	134.696	1443.8
$\frac{1}{2}$	97.782	760.87	37	116.239	1075.2	43	135.088	1452.2
$\frac{1}{2}$	98.175	766.99	$\frac{1}{2}$	116.632	1082.5	$\frac{1}{2}$	135.481	1460.7
$\frac{1}{2}$	98.567	773.14	$\frac{1}{2}$	117.024	1089.8	$\frac{1}{2}$	135.874	1469.1
$\frac{1}{2}$	98.960	779.31	$\frac{1}{2}$	117.417	1097.1	$\frac{1}{2}$	136.267	1477.6
$\frac{1}{2}$	99.353	785.51	$\frac{1}{2}$	117.810	1104.5	$\frac{1}{2}$	136.659	1486.2
$\frac{1}{2}$	99.746	791.73	$\frac{1}{2}$	118.202	1111.8	$\frac{1}{2}$	137.052	1494.7
$\frac{1}{2}$	100.138	797.98	$\frac{1}{2}$	118.596	1119.2	$\frac{1}{2}$	137.445	1503.3
32	100.531	804.25	$\frac{1}{2}$	118.988	1126.7	$\frac{1}{2}$	137.837	1511.9
$\frac{1}{2}$	100.924	810.54	38	119.381	1134.1	44	138.230	1520.5
$\frac{1}{2}$	101.316	816.86	$\frac{1}{2}$	119.773	1141.6	$\frac{1}{2}$	138.623	1529.2
$\frac{1}{2}$	101.709	823.21	$\frac{1}{2}$	120.166	1149.1	$\frac{1}{2}$	139.015	1537.9
$\frac{1}{2}$	102.102	829.58	$\frac{1}{2}$	120.559	1156.6	$\frac{1}{2}$	139.408	1546.6
$\frac{1}{2}$	102.494	835.97	$\frac{1}{2}$	120.951	1164.2	$\frac{1}{2}$	139.801	1555.3
$\frac{1}{2}$	102.887	842.39	$\frac{1}{2}$	121.344	1171.7	$\frac{1}{2}$	140.194	1564.0
$\frac{1}{2}$	103.280	848.83	$\frac{1}{2}$	121.737	1179.3	$\frac{1}{2}$	140.586	1572.8
$\frac{1}{2}$	103.673	855.30	$\frac{1}{2}$	122.129	1186.9	$\frac{1}{2}$	140.979	1581.6
33	104.065	861.79	39	122.522	1194.6	45	141.372	1590.4
$\frac{1}{2}$	104.458	868.31	$\frac{1}{2}$	122.915	1202.3	$\frac{1}{2}$	141.764	1599.3
$\frac{1}{2}$	104.851	874.85	$\frac{1}{2}$	123.308	1210.0	$\frac{1}{2}$	142.157	1608.2
$\frac{1}{2}$	105.243	881.41	$\frac{1}{2}$	123.700	1217.7	$\frac{1}{2}$	142.550	1617.0
			$\frac{1}{2}$	124.093	1225.4	$\frac{1}{2}$	142.942	1626.0
						$\frac{1}{2}$	143.335	1634.9

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Circumferences and Areas of Circles (Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
45 $\frac{1}{2}$	143.728	1643.9	51 $\frac{1}{2}$	162.185	2093.2	57 $\frac{1}{2}$	180.249	2585.4
$\frac{1}{4}$	144.121	1652.9	$\frac{3}{4}$	162.577	2103.3	$\frac{1}{2}$	180.642	2596.7
46	144.513	1661.9	$\frac{1}{2}$	162.970	2113.5	$\frac{3}{4}$	181.034	2608.0
$\frac{1}{2}$	144.906	1670.9	52	163.363	2123.7	$\frac{1}{2}$	181.427	2619.4
$\frac{3}{4}$	145.299	1680.0	$\frac{1}{4}$	163.756	2133.9	$\frac{1}{2}$	181.820	2630.7
$\frac{1}{2}$	145.691	1689.1	$\frac{3}{4}$	164.148	2144.2	58	182.212	2642.1
$\frac{1}{4}$	146.084	1698.2	$\frac{1}{2}$	164.541	2154.5	$\frac{3}{4}$	182.605	2653.5
$\frac{3}{4}$	146.477	1707.4	$\frac{1}{4}$	164.934	2164.8	$\frac{1}{2}$	182.998	2664.9
$\frac{1}{2}$	146.869	1716.5	$\frac{3}{4}$	165.326	2175.1	$\frac{1}{2}$	183.390	2676.4
$\frac{1}{4}$	147.262	1725.7	$\frac{1}{2}$	165.719	2185.4	$\frac{3}{4}$	183.783	2687.8
47	147.655	1734.9	$\frac{3}{4}$	166.112	2195.8	$\frac{1}{2}$	184.176	2699.3
$\frac{1}{2}$	148.048	1744.2	53	166.504	2206.2	$\frac{3}{4}$	184.569	2710.9
$\frac{3}{4}$	148.440	1753.5	$\frac{1}{4}$	166.897	2216.6	$\frac{1}{2}$	184.961	2722.4
$\frac{1}{2}$	148.833	1762.7	$\frac{3}{4}$	167.290	2227.0	59	185.354	2734.0
$\frac{1}{4}$	149.226	1772.1	$\frac{1}{2}$	167.683	2237.5	$\frac{3}{4}$	185.747	2745.6
$\frac{3}{4}$	149.618	1781.4	$\frac{1}{4}$	168.075	2248.0	$\frac{1}{2}$	186.139	2757.2
$\frac{1}{2}$	150.011	1790.8	$\frac{3}{4}$	168.468	2258.5	$\frac{1}{2}$	186.532	2768.8
$\frac{1}{4}$	150.404	1800.1	$\frac{1}{2}$	168.861	2269.1	$\frac{3}{4}$	186.925	2780.5
48	150.796	1809.6	$\frac{3}{4}$	169.253	2279.6	$\frac{1}{2}$	187.317	2792.2
$\frac{1}{2}$	151.189	1819.0	54	169.646	2290.2	$\frac{3}{4}$	187.710	2803.9
$\frac{3}{4}$	151.582	1828.5	$\frac{1}{4}$	170.039	2300.8	$\frac{1}{2}$	188.103	2815.7
$\frac{1}{2}$	151.975	1837.9	$\frac{3}{4}$	170.431	2311.5	60	188.496	2827.4
$\frac{1}{4}$	152.367	1847.5	$\frac{1}{2}$	170.824	2322.1	$\frac{3}{4}$	188.888	2839.2
$\frac{3}{4}$	152.760	1857.0	$\frac{1}{4}$	171.217	2332.8	$\frac{1}{2}$	189.281	2851.0
$\frac{1}{2}$	153.153	1866.5	$\frac{3}{4}$	171.609	2343.5	$\frac{1}{2}$	189.674	2862.9
49	153.545	1876.1	$\frac{1}{2}$	172.002	2354.3	$\frac{3}{4}$	190.066	2874.8
$\frac{1}{4}$	153.938	1885.7	$\frac{3}{4}$	172.395	2365.0	$\frac{1}{2}$	190.459	2886.6
$\frac{3}{4}$	154.331	1895.4	55	172.788	2375.8	$\frac{1}{2}$	190.852	2898.6
$\frac{1}{2}$	154.723	1905.0	$\frac{1}{4}$	173.180	2386.6	$\frac{3}{4}$	191.244	2910.5
$\frac{1}{4}$	155.116	1914.7	$\frac{3}{4}$	173.573	2397.5	61	191.637	2922.5
$\frac{3}{4}$	155.509	1924.4	$\frac{1}{2}$	173.966	2408.3	$\frac{1}{2}$	192.030	2934.5
$\frac{1}{2}$	155.902	1934.2	$\frac{3}{4}$	174.358	2419.2	$\frac{3}{4}$	192.423	2946.5
$\frac{1}{4}$	156.294	1943.9	$\frac{1}{2}$	174.751	2430.1	$\frac{1}{2}$	192.815	2958.5
$\frac{3}{4}$	156.687	1953.7	$\frac{3}{4}$	175.144	2441.1	$\frac{1}{2}$	193.208	2970.6
50	157.080	1963.5	$\frac{1}{2}$	175.536	2452.0	$\frac{3}{4}$	193.601	2982.7
$\frac{1}{2}$	157.472	1973.3	56	175.929	2463.0	$\frac{1}{2}$	193.993	2994.8
$\frac{3}{4}$	157.865	1983.2	$\frac{1}{4}$	176.322	2474.0	62	194.386	3006.9
$\frac{1}{2}$	158.258	1993.1	$\frac{3}{4}$	176.715	2485.0	$\frac{1}{2}$	194.779	3019.1
$\frac{1}{4}$	158.650	2003.0	$\frac{1}{2}$	177.107	2496.1	$\frac{3}{4}$	195.171	3031.3
$\frac{3}{4}$	159.043	2012.9	$\frac{3}{4}$	177.500	2507.2	$\frac{1}{2}$	195.564	3043.5
51	159.426	2022.8	$\frac{1}{2}$	177.893	2518.3	$\frac{3}{4}$	195.957	3055.7
$\frac{1}{2}$	159.829	2032.8	$\frac{3}{4}$	178.285	2529.4	$\frac{1}{2}$	196.350	3068.0
$\frac{1}{4}$	160.221	2042.8	$\frac{1}{2}$	178.678	2540.6	$\frac{3}{4}$	196.742	3080.3
$\frac{3}{4}$	160.614	2052.8	57	179.071	2551.8	$\frac{1}{2}$	197.135	3092.6
$\frac{1}{2}$	161.007	2062.9	$\frac{1}{4}$	179.463	2563.0	$\frac{3}{4}$	197.528	3104.9
$\frac{1}{4}$	161.399	2073.0	$\frac{3}{4}$	179.856	2574.2	63	197.920	3117.2
$\frac{3}{4}$	161.792	2083.1						

For diameters not listed in the tables, figure from the following:

Circumference = diameter $\times$ 3.1416.

Area = $r^2\pi = r^2 \times 3.1416$, but when diameter, D , is known it is figured from diameter:

Area = $D^2 \times 0.7854$.

Index to Tables and Data Appears on Pages 1079 and 1080.

Table for Division of Circles

Length of chord for angle $\alpha = 2r \sin \frac{\alpha}{2}$ Table is figured for r (being the radius of the circle) = 1. For other values of r , multiply by r .

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
3	120 deg.	1.73206	42	8 deg. 34 min.	0.14938
4	90 deg.	1.41422	43	8 deg. 22 min.	0.1459
5	72 deg.	1.17558	44	8 deg. 10 min.	0.14242
6	60 deg.	1	45	8 deg.	0.13952
7	51 deg. 25 min.	0.86732	46	7 deg. 49 min.	0.13603
8	45 deg.	0.76536	47	7 deg. 39 min.	0.133128
9	40 deg.	0.68404	48	7 deg. 30 min.	0.130806
10	36 deg.	0.61804	49	7 deg. 20 min.	0.127904
11	32 deg. 43 min.	0.563	50	7 deg. 12 min.	0.125582
12	30 deg.	0.51764	51	7 deg. 3 min.	0.122678
13	27 deg.	0.4782	52	6 deg. 55 min.	0.120356
14	25 deg.	0.4448	53	6 deg. 47 min.	0.118032
15	24 deg.	0.41582	54	6 deg. 40 min.	0.11629
16	22 deg. 30 min.	0.39018	55	6 deg. 32 min.	0.113966
17	21 deg. 10 min.	0.36734	56	6 deg. 25 min.	0.111644
18	20 deg.	0.3473	57	6 deg. 18 min.	0.1099
19	18 deg. 56 min.	0.32894	58	6 deg. 12 min.	0.108158
20	18 deg.	0.31286	59	6 deg. 06 min.	0.106414
21	17 deg. 08 min.	0.29792	60	6 deg.	0.104672
22	16 deg. 21 min.	0.2841	61	5 deg. 54 min.	0.102928
23	15 deg. 39 min.	0.272	62	5 deg. 48 min.	0.101186
24	15 deg.	0.26106	63	5 deg. 42 min.	0.099442
25	14 deg. 24 min.	0.25066	64	5 deg. 37 min.	0.0977
26	13 deg. 50 min.	0.24086	65	5 deg. 32 min.	0.096538
27	13 deg. 20 min.	0.23218	66	5 deg. 27 min.	0.094794
28	12 deg. 51 min.	0.22352	67	5 deg. 22 min.	0.093632
29	12 deg. 24 min.	0.216	68	5 deg. 17 min.	0.091888
30	12 deg.	0.20906	69	5 deg. 13 min.	0.090765
31	11 deg. 36 min.	0.20212	70	5 deg. 8 min.	0.089564
32	11 deg. 15 min.	0.19574	71	5 deg. 4 min.	0.088402
33	10 deg. 54 min.	0.18996	72	5 deg.	0.087238
34	10 deg. 35 min.	0.18416	73	4 deg. 55 min.	0.085496
35	10 deg. 17 min.	0.17894	74	4 deg. 51 min.	0.084332
36	10 deg.	0.17432	75	4 deg. 48 min.	0.083752
37	9 deg. 43 min.	0.1691	76	4 deg. 44 min.	0.083588
38	9 deg. 28 min.	0.16504	77	4 deg. 40 min.	0.081426
39	9 deg. 13 min.	0.1604	78	4 deg. 36 min.	0.080264
40	9 deg.	0.15692	79	4 deg. 33 min.	0.0791
41	8 deg. 46 min.	0.15286	80	4 deg. 30 min.	0.078518

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Table for Division of Circles—(Continued from page 1132)

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
81	4 deg. 26 min.	0.077356	91	3 deg. 57 min.	0.0686362
82	4 deg. 23 min.	0.076194	92	3 deg. 54 min.	0.0680546
83	4 deg. 20 min.	0.075612	93	3 deg. 52 min.	0.0674732
84	4 deg. 17 min.	0.07445	94	3 deg. 49 min.	0.0663104
85	4 deg. 14 min.	0.073868	95	3 deg. 47 min.	0.0657288
86	4 deg. 11 min.	0.072706	96	3 deg. 45 min.	0.0651474
87	4 deg. 8 min.	0.072124	97	3 deg. 42 min.	0.064566
88	4 deg. 5 min.	0.070962	98	3 deg. 40 min.	0.0639844
89	4 deg. 2 min.	0.07038	99	3 deg. 38 min.	0.063403
90	4 deg.	0.069798	100	3 deg. 36 min.	0.0628216

This table should be useful for gear and chain wheel calculation and design.

$$\text{Length of arc of } a \text{ degrees} = 2r\pi \frac{a}{360} = \frac{d\pi a}{360}$$

$$\text{Area of sector of } a \text{ degrees} = r^2\pi \frac{a}{360} = \frac{d^2 \times 0.7854 d^2 a}{360}$$

Decimal Equivalents of Sixty-Fourths

To convert common fraction into decimal fraction, give the numerator decimal form by adding a period and ciphers. Then divide by denominator.

$\frac{1}{4} = .0156$	$\frac{1}{4} = .2656$	$\frac{1}{4} = .5156$	$\frac{1}{4} = .7656$
$\frac{1}{4} = .0312$	$\frac{1}{4} = .2812$	$\frac{1}{4} = .5312$	$\frac{1}{4} = .7812$
$\frac{1}{4} = .0468$	$\frac{1}{4} = .2968$	$\frac{1}{4} = .5468$	$\frac{1}{4} = .7968$
$\frac{1}{4} = .0625$	$\frac{1}{4} = .3125$	$\frac{1}{4} = .5625$	$\frac{1}{4} = .8125$
$\frac{1}{4} = .0781$	$\frac{1}{4} = .3281$	$\frac{1}{4} = .5781$	$\frac{1}{4} = .8281$
$\frac{1}{4} = .0937$	$\frac{1}{4} = .3437$	$\frac{1}{4} = .5937$	$\frac{1}{4} = .8437$
$\frac{1}{4} = .1093$	$\frac{1}{4} = .3593$	$\frac{1}{4} = .6093$	$\frac{1}{4} = .8593$
$\frac{1}{4} = .1250$	$\frac{1}{4} = .3750$	$\frac{1}{4} = .6250$	$\frac{1}{4} = .8750$
$\frac{1}{4} = .1406$	$\frac{1}{4} = .3906$	$\frac{1}{4} = .6406$	$\frac{1}{4} = .8906$
$\frac{1}{4} = .1562$	$\frac{1}{4} = .4062$	$\frac{1}{4} = .6562$	$\frac{1}{4} = .9062$
$\frac{1}{4} = .1718$	$\frac{1}{4} = .4218$	$\frac{1}{4} = .6718$	$\frac{1}{4} = .9218$
$\frac{1}{4} = .1875$	$\frac{1}{4} = .4375$	$\frac{1}{4} = .6875$	$\frac{1}{4} = .9375$
$\frac{1}{4} = .2031$	$\frac{1}{4} = .4531$	$\frac{1}{4} = .7031$	$\frac{1}{4} = .9531$
$\frac{1}{4} = .2187$	$\frac{1}{4} = .4687$	$\frac{1}{4} = .7187$	$\frac{1}{4} = .9687$
$\frac{1}{4} = .2343$	$\frac{1}{4} = .4843$	$\frac{1}{4} = .7343$	$\frac{1}{4} = .9843$
$\frac{1}{4} = .2500$	$\frac{1}{4} = .5000$	$\frac{1}{4} = .7500$	$1 = 1.0000$

Decimal Fractions of a Linear Inch in Millimetres

Inch	Millimetres	Inch	Millimetres	Inch	Millimetres	Inches	Millimetres
.01	.254	.29	7.366	.57	14.478	.85	21.590
.02	.508	.30	7.620	.58	14.732	.86	21.844
.03	.762	.31	7.874	.59	14.986	.87	22.098
.04	1.016	.32	8.128	.60	15.240	.88	22.352
.05	1.270	.33	8.382	.61	15.494	.89	22.606
.06	1.524	.34	8.636	.62	15.748	.90	22.860
.07	1.778	.35	8.890	.63	16.002	.91	23.114
.08	2.032	.36	9.144	.64	16.256	.92	23.368
.09	2.286	.37	9.398	.65	16.510	.93	23.622
.10	2.540	.38	9.652	.66	16.764	.94	23.876
.11	2.794	.39	9.906	.67	17.018	.95	24.130
.12	3.048	.40	10.160	.68	17.272	.96	24.384
.13	3.302	.41	10.414	.69	17.526	.97	24.638
.14	3.556	.42	10.668	.70	17.780	.98	24.892
.15	3.810	.43	10.922	.71	18.034	.99	25.146
.16	4.064	.44	11.176	.72	18.288	1.00	25.400
.17	4.318	.45	11.430	.73	18.542	2.00	50.799
.18	4.572	.46	11.684	.74	18.796	3.00	76.199
.19	4.826	.47	11.938	.75	19.050	4.00	101.598
.20	5.080	.48	12.192	.76	19.304	5.00	126.998
.21	5.334	.49	12.446	.77	19.558	6.00	152.397
.22	5.588	.50	12.700	.78	19.812	7.00	177.797
.23	5.842	.51	12.954	.79	20.066	8.00	203.196
.24	6.096	.52	13.208	.80	20.320	9.00	228.596
.25	6.350	.53	13.462	.81	20.574	10.00	253.995
.26	6.604	.54	13.716	.82	20.828	11.00	279.395
.27	6.858	.55	13.970	.83	21.082	12.00	304.794
.28	7.112	.56	14.224	.84	21.336	1 foot	

United States Official Millimeters Conversion Table

Millimeters	Equivalent in Inches	Millimeters	Equivalent in Inches
1	0.03937	51	2.00787
2	0.07874	52	2.04724
3	0.11811	53	2.08661
4	0.15748	54	2.12598
5	0.19685	55	2.16535
6	0.23622	56	2.20472
7	0.27559	57	2.24409
8	0.31496	58	2.28346
9	0.35433	59	2.32283
10	0.39370	60	2.36220
11	0.43307	61	2.40157
12	0.47244	62	2.44094
13	0.51181	63	2.48031
14	0.55118	64	2.51968
15	0.59055	65	2.55905
16	0.62992	66	2.59842
17	0.66929	67	2.63779
18	0.70866	68	2.67716
19	0.74803	69	2.71653
20	0.78740	70	2.75590
21	0.82677	71	2.79527
22	0.86614	72	2.83464
23	0.90551	73	2.87401
24	0.94488	74	2.91338
25	0.98425	75	2.95275
26	1.02362	76	2.99212
27	1.06299	77	3.03149
28	1.10236	78	3.07086
29	1.14173	79	3.11023
30	1.18110	80	3.14960
31	1.22047	81	3.18897
32	1.25984	82	3.22834
33	1.29921	83	3.26771
34	1.33858	84	3.30708
35	1.37795	85	3.34645
36	1.41732	86	3.38582
37	1.45669	87	3.42519
38	1.49606	88	3.46456
39	1.53543	89	3.50393
40	1.57480	90	3.54330
41	1.61417	91	3.58267
42	1.65354	92	3.62204
43	1.69291	93	3.66141
44	1.73228	94	3.70078
45	1.77165	95	3.74015
46	1.81102	96	3.77952
47	1.85039	97	3.81889
48	1.88976	98	3.85826
49	1.92913	99	3.89763
50	1.96850	100	3.93700

Kilograms per Square Centimeter in Pounds per Square Inch and Vice Versa

To convert kilograms per square centimeter into pounds per square inch, multiply by 14.223. Oppositely, divide pounds per square inch by 14.223 to convert into kilograms per square centimeter.

Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter
1	.0703	41	2.8826	81	5.6949	205	14.4129
2	.1406	42	2.9529	82	5.7652	210	14.7645
3	.2109	43	3.0232	83	5.8355	215	15.1160
4	.2812	44	3.0935	84	5.9058	220	15.4675
5	.3515	45	3.1638	85	5.9761	225	15.8191
6	.4218	46	3.2341	86	6.0464	230	16.1706
7	.4921	47	3.3044	87	6.1167	235	16.5221
8	.5624	48	3.3747	88	6.1870	240	16.8737
9	.6328	49	3.4450	89	6.2573	245	17.2252
10	.7031	50	3.5153	90	6.3276	250	17.5767
11	.7734	51	3.5856	91	6.3979	255	17.9283
12	.8437	52	3.6559	92	6.4682	260	18.2798
13	.9140	53	3.7263	93	6.5385	265	18.6313
14	.9843	54	3.7966	94	6.6088	270	18.9829
15	1.0546	55	3.8669	95	6.6792	275	19.3344
16	1.1249	56	3.9372	96	6.7495	280	19.6860
17	1.1952	57	4.0075	97	6.8198	285	20.0375
18	1.2655	58	4.0778	98	6.8901	290	20.3890
19	1.3358	59	4.1481	99	6.9604	295	20.7406
20	1.4062	60	4.2184	100	7.0307	300	21.0921
21	1.4764	61	4.2887	105	7.3822	310	21.7951
22	1.5467	62	4.3590	110	7.7338	320	22.4981
23	1.6171	63	4.4293	115	8.0853	330	23.2012
24	1.6874	64	4.4996	120	8.4368	340	23.9043
25	1.7577	65	4.5699	125	8.7884	350	24.6073
26	1.8280	66	4.6402	130	9.1399	360	25.3104
27	1.8983	67	4.7106	135	9.4914	370	26.0135
28	1.9686	68	4.7809	140	9.8430	380	26.7166
29	2.0389	69	4.8512	145	10.1945	390	27.4196
30	2.1092	70	4.9215	150	10.5460	400	28.1227
31	2.1795	71	4.9918	155	10.8976	410	28.8258
32	2.2498	72	5.0621	160	11.2491	420	29.5288
33	2.3201	73	5.1324	165	11.6006	430	30.2319
34	2.3905	74	5.2027	170	11.9522	440	30.9350
35	2.4607	75	5.2730	175	12.3037	450	31.6380
36	2.5310	76	5.3433	180	12.6553	460	32.3411
37	2.6013	77	5.4136	185	13.0068	470	33.0442
38	2.6717	78	5.4839	190	13.3583	480	33.7473
39	2.7420	79	5.5542	195	13.7099	490	34.4503
40	2.8123	80	5.6246	200	14.0614	500	35.1533

Units of Weight and Measure

(From Circular No. 47 of Bureau of Standards, Department of Commerce, Washington)

THE METRIC SYSTEM: Metric units are naturally related. For example: 1 cubic decimeter equals for all practical purposes 1 liter, and 1 liter of water weighs 1 kilogram. The metric terms are formed by combining the words "metre," "gram" and "liter" with the six numerical prefixes, as in the following table:

Prefixes	Meaning		Units
milli- - one-thousandth	$\frac{1}{1000}$	.001	
centi- - one-hundredth	$\frac{1}{100}$	.01	"meter" for length
deci- - one-tenth	$\frac{1}{10}$	.1	"gram" for weight or mass
Unit - one		1	
deka- - ten	$\frac{10}{1}$	10	
hecto- - one hundred	$\frac{100}{1}$	100	"liter" for capacity
kilo - one thousand	$\frac{1000}{1}$	1000	

Definitions of Units

The following lists of units include most of those in general use. Simple conversions may be made from the values here given more readily than from the "Simple and Compound Conversions of Weights, Measures and Money Values" on pages 1141 and 1142, and units not included in the latter may be found here and used. For example, if a conversion into nautical miles is wanted, the conversion factor for statute mile given in the conversion tables may be used by multiplying it by the factor 1.151 553 here given to show relation of nautical mile to statute mile.

LENGTH

FUNDAMENTAL UNITS

A meter (m) is a unit of length equivalent to the distance between the defining lines on the international prototype meter at the International Bureau of Weights and Measures when this standard is at the temperature of melting ice (0°C.). 1 m. = $\frac{3937}{1000}$ in.

A yard (yd.) is a unit of length equivalent to $\frac{3600}{3937}$ of a meter.

(Continued on page 1138)

HIGHER AND LOWER UNITS

1 kilometer (km)	= 1000 meters.
1 hectometer (hm)	= 100 meters.
1 dekameter (dkm)	= 10 meters.
1 decimeter (dm)	= 0.1 meter.
1 centimeter (cm)	= 0.01 meter.
1 millimeter (mm)	= 0.001 meter = 0.1 centimeter.
1 micron (μ)	= 0.000 001 meter = 0.001 millimeter.
1 millimicron ($m\mu$)	= 0.000 000 001 meter = 0.001 micron.
1 foot (ft.)	= $\frac{1}{3}$ yard = $\frac{1200}{3657}$ meter.
1 inch (in.)	= $\frac{1}{36}$ yard = $\frac{1}{12}$ foot = $\frac{100}{3657}$ meter.
1 link (li.)	= 0.22 yard = 7.92 inches.
1 rod (rd.)	= 5 $\frac{1}{2}$ yards = 16 $\frac{1}{2}$ feet.
1 chain (ch.)	= 22 yards = 100 links = 66 feet = 4 rods.
1 furlong (fur.)	= 220 yards = 40 rods = 10 chains.
1 statute mile (mi.)	= 1760 yards = 5280 feet = 320 rods.
1 hand	= 4 inches.
1 point	= $\frac{1}{16}$ inch.
1 mil	= 0.001 inch.
1 fathom	= 6 feet.
1 span	= 9 inches = $\frac{3}{4}$ fathom.
1 nautical mile	} United States = 6080.20 feet = 1.151 553 statute miles = 1853.249 meters.
1 seal mile	
1 geographical mile	

AREA

FUNDAMENTAL UNITS

A square meter (m^2) = 1.195985 sq. yd.A square yard (sq. yd.) = 0.8361307 m^2 .

HIGHER AND LOWER UNITS

1 square kilometer (km^2)	= 1 000 000 square meters.
1 hectare (ha) or square hectometer (hm^2)	= 10 000 square meters.
1 are (a), or square dekameter (dkm^2)	= 100 square meters.
1 centare (ca)	= 1 square meter.
1 square decimeter (dm^2)	= 0.01 square meter.
1 square centimeter (cm^2)	= 0.0001 square meter.
1 square millimeter (mm^2)	= 0.000 001 square meter = 0.01 square centimeter.
1 square foot (sq. ft.)	= $\frac{1}{9}$ square yard.
1 square inch (sq. in.)	= $\frac{1}{144}$ square yard = $\frac{1}{16}$ square foot.
1 square link (sq. li.)	= 0.0484 square yard = 62.7264 square inches.
1 square rod (sq. rd.)	= 30.25 square yards = 272.25 square feet = 625 square links.
1 square chain (sq. ch.)	= 484 square yards = 16 square rods = 100 000 square links.
1 acre (A.)	= 4840 square yards = 160 square rods = 10 square chains.
1 square mile (sq. mi.)	= 3 097 600 square yards = 640 acres.

VOLUME

FUNDAMENTAL UNITS

A cubic meter (m^3) = 1.307 9428 cu. yd.A cubic yard (cu. yd.) = 0.17645594 m^3 .

HIGHER AND LOWER UNITS

1 cubic kilometer (km^3)	= 1 000 000 000 cubic meters.
1 cubic hectometer (hm^3)	= 1 000 000 cubic meters.
1 cubic dekameter (dkm^3)	= 1000 cubic meters.
1 stere (s)	= 1 cubic meter
1 cubic decimeter (dm^3)	= 0.001 cubic meter.
1 cubic centimeter (cm^3)	= 0.000 001 cubic meter = 0.001 cubic decimeter.
1 cubic millimeter (mm^3)	= 0.000 000 001 cubic meter = 0.001 cubic centimeter.
1 cubic foot (cu. ft.)	= $\frac{1}{27}$ cubic yard.
1 cubic inch (cu. in.)	= $\frac{1}{1728}$ cubic yard = $\frac{1}{12^3}$ cubic foot.
1 board foot	= 144 cubic inches $\frac{1}{12}$ = cubic foot.
1 cord (cd.)	= 128 cubic feet.

(Continued on following page)

CAPACITY

FUNDAMENTAL UNITS

A liter (l) is a unit of capacity equivalent to the volume occupied by the mass of 1 kilogram of pure water at its maximum density (at a temperature of 4° C. practically) and under the standard atmospheric pressure of 760 mm). It is equivalent in volume to 1.000 027 cubic decimeters. One l = 0.264168 gal.

A gallon (gal.) is a unit of capacity equivalent to the volume of 231 cubic inches. It is used for the measurement of liquid commodities only. 1 gal. = 3.785 332 liter. A British gallon is approximately 20 per cent larger.

A bushel (bu.) is a unit of capacity equivalent to the volume of 2150.42 cubic inches. It is used in the measurement of dry commodities only. The bushel is the so-called stricken or struck bushel. Many dry commodities are sold by heaped bushel, which is generally specified in the State Laws to be the usual stricken bushel measure "duly heaped in the form of a cone as high as the article will admit" or "heaped as high as may be without special effort or design." The heaped bushel was originally intended to be 25 per cent greater than the bushel. A British bushel is 3 per cent larger.

HIGHER AND LOWER UNITS

- 1 hectoliter (hl) = 100 liters.
- 1 dekaliter (dkl) = 10 liters.
- 1 deciliter (dl) = 0.1 liter.
- 1 centiliter (cl) = 0.01 liter.
- 1 milliliter (ml) = 0.001 liter = 1.000 027 cubic centimeters.
- 1 liquid quart (liq. qt.) = $\frac{1}{4}$ gallon = 57.75 cubic inches.
- 1 liquid pint (liq. pt.) = $\frac{1}{2}$ gallon = $\frac{1}{2}$ liquid quart = 28.875 cubic inches.
- 1 gill (gi.) = $\frac{1}{4}$ gallon = $\frac{1}{2}$ liquid pint = 7.21875 cubic inches.
- 1 fluid ounce (fl. oz.) = $\frac{1}{128}$ gallon = $\frac{1}{16}$ liquid pint.
- 1 fluid dram (fl. dr.) = $\frac{1}{8}$ fluid ounce = $\frac{1}{256}$ liquid pint.
- 1 minim (min. or m) = $\frac{1}{60}$ fluid dram = $\frac{1}{1536}$ fluid ounce.
- 1 firkin = 9 gallons.
- 1 peck (pk.) = $\frac{1}{4}$ bushel = 537.605 cubic inches.
- 1 dry quart (dry qt.) = $\frac{1}{2}$ bushel = $\frac{1}{2}$ peck = 67.200 625 cubic inches.
- 1 dry pint (dry pt.) = $\frac{1}{4}$ bushel = $\frac{1}{2}$ dry quart = 33.600312 5 cubic inches.
- 1 barrel (for fruit, vegetables and other dry commodities) = 7056 cubic inches = 105 dry quarts. (By U. S. Statute, March 4, 1915.)

MASS OR WEIGHT

FUNDAMENTAL UNITS

A kilogram (kg) is a unit of mass equivalent to the mass of the international prototype kilogram at the International Bureau of Weights and Measures. One kg. = 2.204 622 341 lb. av.

An avoirdupois pound (lb. av.) = 0.453 592 427 7 kilogram.

A gram (g) is a unit of mass equivalent to one-thousandth of the mass of the international prototype kilogram at the International Bureau of Weights and Measures.

A troy pound (lb. t.) is a unit of mass equivalent to $\frac{5780}{7000}$ of that of the avoirdupois pound.

HIGHER AND LOWER UNITS

- 1 metric ton (t) = 1000 kilograms.
- 1 hectogram (hg) = 100 grams = 0.1 kilogram.
- 1 dekagram (dkg) = 10 grams = 0.01 kilogram.
- 1 decigram (dg) = 0.1 gram.
- 1 centigram (cg) = 0.01 gram.
- 1 milligram (mg) = 0.001 gram.
- 1 avoirdupois ounce (oz. av.) = $\frac{1}{16}$ avoirdupois pound.
- 1 avoirdupois dram (dr. av.) = $\frac{1}{16}$ avoirdupois ounce = $\frac{1}{256}$ avoirdupois pound.
- 1 grain (gr.) = $\frac{1}{7000}$ avoirdupois pound = $\frac{1}{480}$ avoirdupois ounce = $\frac{1}{5760}$ troy pound.
- 1 apothecaries' pound (lb. ap.) = 1 troy pound = $\frac{5760}{7000}$ avoirdupois pound.
- 1 apothecaries' or troy ounce (oz. ap. or $\mathfrak{z}$, or oz. t.) = $\frac{1}{12}$ troy pound = $\frac{480}{7000}$ avoirdupois pound = 480 grains.
- 1 apothecaries' dram (dr. ap. or $\mathfrak{d}$) = $\frac{1}{8}$ apothecaries' pound = $\frac{1}{4}$ apothecaries' ounce = 60 grains.
- 1 pennyweight (dwt.) = $\frac{1}{20}$ troy ounce = 24 grains.
- 1 apothecaries' scruple (s. ap. or $\mathfrak{s}$) = $\frac{1}{3}$ apothecaries' dram = 20 grains.
- 1 metric carat (c) = 200 milligrams = 0.2 gram.
- The old carat in use in this country previous to July 1, 1913, was of 205.3 milligrams.
- 1 short hundredweight (sh. cwt.) = 100 avoirdupois pounds.
- 1 long hundredweight (l. cwt.) = 112 avoirdupois pounds.
- 1 short ton (sh. tn.) = 2000 avoirdupois pounds.
- 1 long ton (l. tn.) = 2240 avoirdupois pounds.

(Continued on page 1140)

Spelling and Abbreviation of Units

Following the names of each unit in the list below is given the abbreviation which the Bureau has adopted. Attention is particularly called to the following principles:

1. The period is omitted after the abbreviations of the metric units, while it is used after those of the customary system.

2. The exponents "2" and "3" are used to signify area and volume, respectively, in the case of the metric units instead of the longer prefixes "sq" or "cu." In conformity with this principle the abbreviation for cubic centimeter is "cm³," instead of "c.c." or "c.m." The term "cubic centimeter" as used in chemical work is, in fact, a misnomer, since the unit actually used is the "milliliter," which has a slightly larger volume.

3. The use of the same abbreviation for both singular and plural is recommended. This practice is already established in expressing metric units and is in accordance with the spirit and chief purpose of abbreviations.

4. It is also suggested that, unless all the text is printed in capital letters, only small letters be used for abbreviations except in the case of A. for acre, where the use of the capital letter is general.

ABBREVIATIONS FOR TERMS OF WEIGHT AND MEASURE

Unit	Abbreviation	Unit	Abbreviation	Unit	Abbreviation
acre.....	A.	dram, avoirdupois.....	dr. av.	ounce, avoirdupois.....	oz. av.
are.....	a	dram, fluid.....	fl. dr.	ounce, fluid.....	fl. oz.
avoirdupois.....	av.	fathom.....	fath.	ounce, troy.....	oz. t.
barrel.....	bbbl.	foot.....	ft.	peck.....	pk.
board foot.....	bd. ft.	firkin.....	fir.	pennyweight.....	dwt.
bushel.....	bu.	furlong.....	fur.	pint.....	pt.
carat, metric.....	c	gallon.....	gal.	pound.....	lb.
centare.....	ca	grain.....	gr.	pound, apothecaries'.....	lb. ap.
centigram.....	cg	gram.....	g.	pound, avoirdupois.....	lb. av.
centiliter.....	cl	hectare.....	ha	pound, troy.....	lb. t.
centimeter.....	cm	hectogram.....	hg	quart.....	qt.
chain.....	ch.	hectoliter.....	hl	rod.....	rd.
cubic centimeter.....	cm ³	hectometer.....	hm	scruple, apothecaries'.....	s. ap. or ʒ
cubic decimeter.....	dm ³	hogshead.....	hhd.	square centimeter.....	cm ²
cubic dekameter.....	dkm ³	hundredweight.....	cwt.	square chain.....	sq. ch.
cubic foot.....	cu. ft.	inch.....	in.	square decimeter.....	dm ²
cubic hectometer.....	hm ³	kilogram.....	kg	square dekameter.....	dkm ²
cubic inch.....	cu. in.	kiloliter.....	kl	square foot.....	sq. ft.
cubic kilometer.....	km ³	kilometer.....	km	square hectometer.....	hm ²
cubic meter.....	m ³	link.....	li.	square inch.....	sq. in.
cubic mile.....	cu. mi.	liquid.....	liq.	square kilometer.....	km ²
cubic millimeter.....	mm ³	liter.....	l	square meter.....	m ²
cubic yard.....	cu. yd.	meter.....	m	square mile.....	sq. mi.
decigram.....	dg	metric ton.....	t	square millimeter.....	mm ²
deciliter.....	dl	micron.....	μ	square rod.....	sq. rd.
decimeter.....	dm	mile.....	mi.	square yard.....	sq. yd.
decistere.....	ds	milligram.....	mg	stere.....	s
dekagram.....	dkg	milliliter.....	ml	ton.....	tn.
dekaliter.....	dkl	millimeter.....	mm	ton, metric.....	t
dekameter.....	dkm	millimicron.....	mμ	troy.....	t.
dekastere.....	dks	minim.....	min. or m.	yard.....	yd.
dram, apothecaries'.....	dr. ap. or ʒ	ounce.....	oz.		
		ounce, apothecaries'.....	oz. ap or ʒ		

Simple and Compound Conversions of Weights, Measures and Money Values

By MARTIN C. KRAUP

The figures in the conversion tables on page 1142 are taken from Circular No. 47 of the Bureau of Standards, Department of Commerce, Washington, D. C. The special arrangement of the figures is devised so that users of this **AUTOMOBILE DIRECTORY** may have in one place all the data required for simple and compound conversions, no other figuring being necessary than simple multiplication and division (though logarithms can be used to advantage if desired). The underlying idea is that it is usually much easier to figure a little than to find a table of equivalents in which the figuring is done. Also, that tables for compound conversions include only a few of the numerous compound conversions that may be demanded, and that all tables of ready-figured values leave gaps which must be figured anyway.

In the appended tables a conversion figure is established for every unit, and by this simple means all conversions become possible from very few data.

(Rule for multiplying with decimals: If one factor has m decimals and the other factor has n decimals, multiply without regard for decimal point and place it in the product $m+n$ places from the right.)

(Rule for division with decimals: If divisor has m decimals, move decimal point m places to the right in both figures. Place decimal point in quotient when it is reached in the division.)

For most practical purposes, the decimals may be cut down to three or four, greatly abbreviating the figuring.

HOW TO USE THE CONVERSION TABLES

For a simple conversion such as: How many bushels are 606 hectoliters? We have

$$x \text{ bushels} = 606 \text{ hectoliters}$$

For bushels and hectoliters substitute their conversion figure. Then we have

$$\begin{aligned} x \times 35.2383 &= 606 \times 100 \text{ and} \\ &60600 \\ x &= \frac{60600}{35.2383} = 1719.718 \text{ bushels} \end{aligned}$$

Example: How many kilograms does 4 liters weigh when 0.3 liquid quart weighs 7 lb. av.? We have the ordinary equation by "rule of three" that

$$\begin{aligned} \frac{x \text{ kg.}}{4 \text{ liters}} &= \frac{7 \text{ lb. av.}}{0.3 \text{ qt.}} \end{aligned}$$

Now the simple rule is: Replace the names of the units by their respective conversion factors. The above equation then becomes:

$$\begin{aligned} \frac{x \times 1}{4 \times 1} &= \frac{7 \times 0.4535924277}{0.3 \times 0.946333} \\ \text{or, simplified by cutting down the decimals:} \\ \frac{x}{4} &= \frac{7 \times 0.45359}{0.3 \times 0.94633} \text{ or } x \text{ (kg.)} = \frac{4 \times 7 \times 0.45359}{0.3 \times 0.94633} = 44.735 \text{ kg.} \end{aligned}$$

Example 2: If 4 British gallons cost 2£ 7 sh., what is 5 gallons worth in American money? We have

$$\frac{x \text{ dollars}}{5 \text{ gal.}} = \frac{2£ 7 \text{ sh.}}{4 \text{ British gal.}}$$

We do not find British gallons in the conversion tables, but by looking under "Units of Weight and Measure" on page 1196 we see that a British gallon is 20 per cent larger than the American gallon. So for "British" we use the factor 1.20. The equation then becomes:

$$\begin{aligned} \frac{x \times 1}{5 \times 3.785332} &= \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20 \times 3.785332} \\ \text{or, simplified by crossing out the repeated conversion factor for "gallon":} \\ \frac{x}{5} &= \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20} \\ \text{and } x \text{ dollars} &= \frac{48.665 + (35 \times 0.2433)}{4.80} = \$11.91 \end{aligned}$$

(Continued on following page)

Conversion Tables

See page 1141 for directions in using these tables for simple or compound conversions.

Length			Capacity, Dry		
Units	=	Meters	Units	=	Liters
1 inch	=	0.025 400 05	1 dry pint	=	0.550 599
1 link	=	0.201 168 4	1 dry quart	=	1.101 198
1 foot	=	0.304 800 6	1 peck	=	8.809 58
1 yard	=	0.914 401 8	1 bushel	=	35.2383
1 rod	=	5.029 210	1 liter	=	1
1 chain	=	20.116 84	1 dekaliter	=	10
1 mile	=	1609.3472	1 cubic inch	=	0.016 3867
1 centimeter	=	0.01			
1 meter	=	1			

Area			Weight, below lb. and kg.		
Units	=	Square Meters	Units	=	Kilograms
1 square inch	=	0.000 645 162 6	1 grain	=	0.000 064 798 9
1 square link	=	0.040 468 73	1 apoth. scruple	=	0.001 295 978
1 square foot	=	0.092 903 41	1 pennyweight	=	0.001 555 174
1 square yard	=	0.836 130 7	1 avoird. dram	=	0.001 771 845
1 square rod	=	25.292 95	1 avoird. ounce	=	0.003 887 935
1 square chain	=	404.6873	1 apoth. or troy ounce	=	0.028 349 53
1 acre	=	4046.873	1 apoth. or troy pound	=	0.373 241 77
1 square mile	=	2 589 998.000	1 avoird. pound	=	0.453 592 427 7
1 square centimeter	=	0.0001	1 avoird. pound	=	0.000 001
1 square meter	=	1	1 milligram	=	0.001
1 hectare	=	10 000.000	1 gram	=	1
			1 kilogram	=	1

Volume			Weight, above oz. av.		
Units	=	Cubic Meters	Units	=	Kilograms
1 cubic inch	=	0.000 016 387 16	1 avoirdupois ounce	=	0.028 349 53
1 cubic foot	=	0.028 317 016	1 avoirdupois pound	=	0.453 592 427 7
1 cubic yard	=	0.764 559 4	1 short hundredweight	=	45.359 243
1 cubic centimeter	=	0.000 001	1 short ton	=	907.184 86
1 cubic decimeter	=	0.001	1 long ton	=	1016.047 04
1 cubic meter	=	1	1 kilogram	=	1
			1 metric ton	=	1000

Capacity, Liquid			Money Values		
Units	=	Liters	(Legal equivalents from Secretary of Treasury, July 1, 1914)		
1 minim	=	0.000 061 610 2	Units	=	Dollars
1 fluid dram	=	0.003 696 61	1 dollar	=	1.
1 fluid ounce	=	0.029 572 9	1 franc (French)	=	.193
1 gill	=	0.118 292	1 mark (German)	=	.238
1 liquid pint	=	0.473 167	1 pound sterling (British)	=	4.8665
1 liquid quart	=	0.946 333	1 shilling (British)	=	.2433
1 gallon	=	3.785 332	1 penny (British)	=	.020275
1 milliliter	=	0.001			
1 liter	=	1			
1 cubic inch	=	0.016 386 7			

Cents, centimes and pfennig are not included as they may be figured as decimals of dollar, franc and mark, respectively.

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

A Convenient Metric Conversion

Compiled by C. W. Hunt

Millimeters	×	.03937	= inches.
Millimeters	÷	25.4	= inches.
Centimeters	×	.3937	= inches.
Centimeters	÷	2.54	= inches.
Meters	×	39.37	= inches. (Act of Congress.)
Meters	×	3.281	= feet.
Meters	×	1.094	= yards.
Kilometers	×	.6214	= miles.
Kilometers	÷	1.6093	= miles.
Kilometers	×	3280.8	= feet.
Square Millimeters	×	.00155	= square inches.
Square Millimeters	÷	645.2	= square inches.
Square Centimeters	×	.155	= square inches.
Square Centimeters	÷	6.452	= square inches.
Square Meters	×	10.764	= square feet.
Square Kilometers	×	247.1	= acres.
Hectare	×	2.471	= acres.
Cubic Centimeters	÷	16.387	= cubic inches.
Cubic Centimeters	÷	3.697	= fluid drachms.
Cubic Centimeters	÷	29.57	= fluid ounces.
Cubic Meters	×	35.314	= cubic feet.
Cubic Meters	×	1.308	= cubic yards.
Cubic Meters	×	264.2	= gallons (231 cubic inches).
Liters	×	61.023	= cubic inches. (Act of Congress.)
Liters	×	33.84	= fluid ounces.
Liters	×	.2642	= gallons (231 cubic inches).
Liters	÷	3.785	= gallons (31 cubic inches).
Liters	÷	28.317	= cubic feet.
Hectoliters	×	3.531	= cubic feet.
Hectoliters	×	2.838	= bushels (2150.42 cubic inches).
Hectoliters	×	.1308	= cubic yards.
Hectoliters	×	26.42	= gallons (231 cubic inches).
Grammes	×	15.432	= grains. (Act of Congress.)
Grammes	×	981	= dynes.
Grammes	÷	28.35	= ounces avoirdupois.
Joule	×	.7373	= foot pounds.
Kilograms	×	2.2046	= pounds.
Kilograms	×	35.27	= ounces avoirdupois.
Kilograms	÷	907.2	= tons (2,000 pounds).
Kilograms per square cent.	×	14.223	= pounds per square inch.
Kilogrammmeters	×	7.233	= foot lbs.
Kilo per Meter	×	.672	= lbs. per foot.
Kilo per Cubic Meter	×	.0624	= lbs. per cubic foot.
Kilo-watts	×	1.34	= horse-power.
Watts	÷	746	= horse-power.
Watts	×	.7373	= ft. pounds per second.
Caloric	×	3.968	= B.T.U.
Cheval vapeur	×	.9863	= horse-power.
Centigrade	×	1.8 + 32	= degree Fahrenheit.
Francs	×	.193	= dollars.
Gravity Paris	=	980.94	Centimeter per sec.

French and American Equivalent Measures

MEASURES OF LENGTH

French		United States
1 meter	.....	39.37 inches, or 3.28083 feet
.3048 meter	.....	1 foot
1 centimeter	.....	.3937 inch
2.54 centimeters	.....	1 inch
1 millimeter	.....	.03937 inch, or $\frac{1}{25}$ inch nearly
25.4 millimeters	.....	1 inch
1 kilometer	.....	1093.61 yards, or .62137 mile

Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units
1 Kilowatt Hour =	1,000 watt hours. 1.341 horsepower hours. 2,655,180 ft.-lbs. 3,600,000 joules. 3,415 heat units. 367,100 kilogram meters. 0.234 lb. carbon oxidized with perfect efficiency. 3.52 lbs. water evaporated from and at 212 degrees F. 22.77 lbs. of water raised from 62 degrees to 212 degrees F.
1 Horsepower Hour =	0.7457 kilowatt hours. 1,980,000 ft.-lbs. 2,546.5 heat units per hour. 273,740 kilogram meters. 0.174 lb. carbon oxidized with perfect efficiency. 2.62 lbs. water evaporated from and at 212 degrees F. 17.0 lbs. water raised from 62 degrees F. to 212 degrees F.
1 Kilo-watt =	1,000 watts. 1.3410 horsepower. 2,655,180 ft.-lbs. per hour. 44,253 ft.-lbs. per minute. 737.56 ft.-lbs. per second. 3,415 heat units per hour. 56.92 heat units per minute. 0.9846 heat units per second. 0.234 lb. carbon oxidized per hour. 3.52 lbs. water evap. per hour from and at 212 degrees.
1 Horsepower =	745.7 watts. 0.7457 kilowatt. 33,000 ft.-lbs. per minute. 550 ft.-lbs. per second. 2,546.5 heat units. 42.44 heat units per minute. 0.707 heat units per second. 0.174 lb. carbon oxidized per hour. 2.62 lbs. water evap. per hour from and at 212 degrees F.
1 Joule =	1 watt second. 0.00000278 kilowatt hour. 0.102 kilogram meters. 0.0009486 heat units. 0.73756 ft.-lb.

(Continued on following page)

Index to Tables and Data Appears on Pages 1079 and 1080

Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units
1 Ft.-lb. =	1.3558 joules. 0.13826 kilogram meters. 0.000003766 kilowatt hour. 0.0012861 heat unit. 0.0000005 horsepower hour.
1 Watt =	1 joule per second. 0.001341 horsepower. 3.415 heat units per hour. 0.73756 ft.-lb. per second. 0.0035 lb. water evap. per hour. 44.254 ft.-lbs. per minute.
1 Watt per sq. in. =	8.20 heat units per sq. ft. per minute. 6,373 ft.-lbs. per sq. ft. per minute. 0.1931 horsepower per sq. ft.
1 Heat unit =	1,054.2 watt seconds. 777.54 ft.-lbs. 107.5 kilogram meters. 0.0002928 kilowatt hour. 0.0003927 horsepower hour. 0.0000685 lb. carbon oxidized. 0.001030 lb. water evap. from and at 212 degrees F.
1 Heat unit per sq. ft. per min. =	0.1220 watt per sq. in. 0.01757 kilowatt per sq. ft. 0.02356 horsepower per sq. ft.
1 Kilogram Meter =	7.233 ft.-lbs. 0.000003653 horsepower hour. 0.000002724 kilowatt hour. 0.009302 heat unit.
1 lb. Carbon Oxidized with perfect efficiency =	14,600 heat units. 1.11 lbs. anthracite coal oxidized. 2.5 lbs. dry wood oxidized. 22 cubic feet illuminating-gas. 4.275 kilowatt hours. 5.733 horsepower hours. 11,352,000 ft.-lbs. 15.05 lbs. of water evap. from and at 212 degrees F.
1 lb. Water Evap. from and at 212 degrees F. =	0.2841 kilowatt hour. 0.3811 horsepower hour. 970.4 heat units. 104,320 kilogram meters. 1,023,000 joules. 754.525 ft.-lbs. 0.066466 lb. carbon oxidized.

**Table of Kilogramme Calories, Equivalent to
British Thermal Units**

British Thermal	0	1	2	3	4	5	6	7	8	9	British Thermal
0		.252	.504	.756	1.008	1.260	1.512	1.764	2.016	2.268	0
10	2.52	2.772	3.024	3.276	3.528	3.780	4.032	4.284	4.536	4.788	10
20	5.04	5.292	5.544	5.796	6.048	6.300	6.552	6.804	7.056	7.308	20
30	7.56	7.812	8.064	8.316	8.568	8.820	9.072	9.324	9.576	9.828	30
40	10.08	10.332	10.584	10.836	11.088	11.340	11.592	11.844	12.096	12.348	40
50	12.60	12.852	13.104	13.356	13.608	13.860	14.112	14.364	14.616	14.868	50
60	15.12	15.372	15.624	15.876	16.128	16.380	16.632	16.884	17.136	17.388	60
70	17.64	17.892	18.144	18.396	18.648	18.900	19.152	19.404	19.656	19.908	70
80	20.16	20.412	20.664	20.916	21.168	21.420	21.672	21.924	22.176	22.428	80
90	22.68	22.932	23.184	23.436	23.688	23.940	24.192	24.444	24.696	24.948	90

1 British thermal unit = 251.996 gramme calories.

Weights, Fusion Points and Conductivity of Metals

	Pounds per Cu. Ft.	Specific Gravity	Fusion Point	Heat Conductivity	Electric Conductivity
Aluminum.....	166	2.66	1159	313	551
Antimony.....	418	6.70	800	40	42
Babbitt metal.....	440	7.18	.....	.....	.....
Bismuth.....	607	9.74	511	18	12
Brass, cast.....	505	8.10	.....	.....	.....
Brass, rolled.....	525	8.40	.....	.....	.....
Bronze, aluminum.....	471	7.55	.....	.....	.....
Bronze, phosphor.....	576	9.23	.....	.....	.....
Copper, cast.....	542	8.70	1922	736	999
Copper, rolled.....	555	8.90	.....	.....	.....
Gold, 24 carat.....	1204	19.26	1913	532	806
Iron, cast.....	450	7.21	.....	.....	.....
Iron, wrought.....	480	7.90	.....	119	164
Iron, pure.....	.....	.....	2912	.....	.....
Lead, commercial.....	710	11.38	621	85	88
Mercury, 60F.....	846	13.58	.....	13	25
Nickel.....	549	8.80	2640	.....	79
Platinum.....	1342	21.50	3230	84	167
Silver.....	655	10.50	1742	1000	1000
Steel, Bessemer.....	490	7.85	.....	.....	.....
Tin.....	459	7.35	450	152	157
Zinc.....	437	7.15	783	.....	.....

Heat and electric conductivity are measured in comparison with these properties in silver.

The weight of a cubic foot of distilled water is in pounds, 62.47 at 32 deg. F., 62.425 at 39 deg. F., 62.355 at 62 deg. F., 59.700 at 212 deg. F., and 57.400 as ice.

Capacity of Atmospheric Air for Water Vapor at Different Temperatures

Temperature in Degrees Fahrenheit	Pounds per Cubic Feet Dry Air	Pounds of Vapor in One Pound of Air	Weight in Pounds, Cubic Feet Saturated Air	Vapor in Air	A | V
32	0.0807	0.00379	0.0802	0.000304	263.7
42	0.0791	0.00561	0.0784	0.000440	178.18
52	0.0776	0.00819	0.0766	0.000627	122.
62	0.0761	0.01179	0.0747	0.000881	85.
72	0.0747	0.01680	0.0727	0.001221	59.5
82	0.0733	0.02361	0.0706	0.001667	42.3
92	0.0720	0.03289	0.0684	0.002250	30.3
102	0.0707	0.04547	0.0659	0.002997	22.

Variation of Volume and Temperature With Compression

Gauge Pressure	Volume	Temperature
0	1.000	60
2	.910	80.4
5	.810	106
10	.690	145
20	.543	207
30	.454	252
40	.393	302
50	.350	339
75	.276	420
100	.232	485
115	.213	518
130	.197	550
145	.184	580
160	.172	607
175	.163	632
200	.149	672

This table is figured on the assumption that no heat is added or abstracted.

Boiling Point of Water at Various Altitudes

Altitude Above Sea Level in Feet	Boiling Point of Water in Degrees Fahrenheit
0.000	212
1,025	210
2,063	208
3,115	206
4,169	204
5,225	202
6,304	200
7,381	198
8,431	196
9,579	194
10,685	192
11,800	190

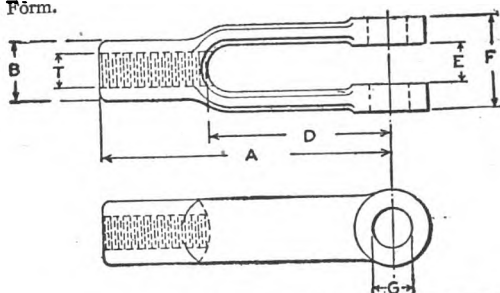
To keep the cooling water from reaching the boiling point at any altitude, as well as at any atmospheric temperature, automatic heat regulation is therefore necessary.

Index to Tables and Data Appears on Pages 1079 and 1080

Adjustable Yoke Rod Ends

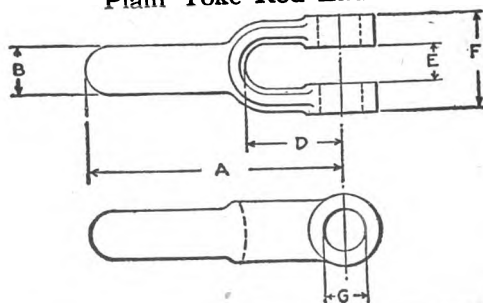
Threads U. S. Form.

S. A. E. Practice.



T	A	B	D	E	F	G	Limits of G	
$\frac{3}{16}$ —32	$1\frac{1}{16}$	$\frac{7}{16}$	1	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{1}{4}$ —28	2	$\frac{7}{16}$	$1\frac{1}{4}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{5}{16}$ —24	$2\frac{1}{4}$	$\frac{7}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{3}{4}$ —20	$2\frac{1}{2}$	$\frac{7}{16}$	$1\frac{1}{2}$	$\frac{1}{2}$	1	$\frac{3}{16}$	+0.001	-0.001
$\frac{1}{2}$ —20	$4\frac{1}{16}$	$1\frac{1}{16}$	$3\frac{1}{16}$	$\frac{9}{16}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{3}{8}$ —18	$4\frac{1}{16}$	$1\frac{1}{16}$	$3\frac{1}{16}$	$\frac{1}{2}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{1}{2}$ —16	$6\frac{1}{16}$	$1\frac{1}{16}$	$4\frac{1}{16}$	$\frac{1}{2}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{3}{4}$ —14	$7\frac{1}{16}$	$1\frac{1}{16}$	$5\frac{1}{16}$	$\frac{1}{2}$	$1\frac{1}{8}$	1	+0.001	-0.002
1—14	8	1	6	$1\frac{1}{16}$	$2\frac{1}{8}$	1	+0.001	-0.002

Plain Yoke Rod Ends



B	A	D	E	F	G	Limits of G	
$\frac{3}{16}$	$1\frac{1}{4}$	$\frac{7}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{1}{4}$	$1\frac{1}{4}$	$\frac{7}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{5}{16}$	2	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{3}{8}$	$2\frac{1}{4}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	-0.001
$\frac{1}{2}$	$2\frac{1}{4}$	1	$\frac{1}{2}$	1	$\frac{3}{16}$	+0.001	-0.001
$\frac{3}{8}$	$2\frac{1}{4}$	$1\frac{1}{16}$	$\frac{9}{16}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{1}{2}$	$2\frac{1}{4}$	$1\frac{1}{16}$	$\frac{1}{2}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{3}{4}$	$3\frac{1}{16}$	$1\frac{1}{16}$	$\frac{1}{2}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
$\frac{1}{2}$	4	2	$1\frac{1}{16}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	-0.002
1	$4\frac{1}{4}$	$2\frac{1}{4}$	$1\frac{1}{16}$	$2\frac{1}{8}$	1	+0.001	-0.002

(Continued on following page.)

Index to Tables and Data Appears on Pages 1079 and 1080

The drawing shows a mechanical part with the following dimensions:

- A**: Total length of the part.
- B**: Total height of the part.
- C**: Radius of the rounded end.
- D**: Diameter of the central hole.
- E**: Thickness of the part.
- G**: Diameter of the circular feature in the top view.

A	B	D	E	G	Limits of G	
1½	¾	½	⅙	⅙	+0.001	-0.001
1½	¾	½	⅙	⅙	+0.001	-0.001
1½	¾	⅙	⅙	⅙	+0.001	-0.001
1½	¾	⅙	⅙	⅙	+0.001	-0.001
1½	¾	⅙	⅙	⅙	+0.001	-0.001
1½	¾	⅙	⅙	⅙	+0.001	-0.002
2	¾	⅙	⅙	⅙	+0.001	-0.002
2½	¾	⅙	⅙	⅙	+0.001	-0.002
2½	¾	⅙	⅙	⅙	+0.001	-0.002
3	1	1½	1½	1	+0.001	-0.002

[illegible]

A	Limits of A	B	C	D		E	F	G	H
	-0.002 -0.004	$\frac{3}{16}$	$\frac{1}{16}$	$\frac{3}{16}$	0.4844	$\frac{19}{32}$	$\frac{31}{32}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.002 -0.004	$\frac{3}{8}$	$\frac{3}{16}$	$\frac{5}{16}$	0.6719	$\frac{21}{32}$	$\frac{5}{16}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.002 -0.004	$\frac{1}{2}$	$\frac{1}{8}$	$\frac{13}{16}$	0.8125	$\frac{23}{32}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.002 -0.004	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{15}{16}$	0.9375	$1\frac{1}{32}$	$1\frac{1}{32}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.002 -0.004	$\frac{3}{16}$	$\frac{3}{8}$	$1\frac{1}{16}$	1.0625	$1\frac{1}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.004 -0.007	$\frac{1}{8}$	$\frac{1}{4}$	$1\frac{1}{8}$	1.2031	$1\frac{3}{8}$	$1\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.004 -0.007	$\frac{1}{4}$	$\frac{1}{2}$	$1\frac{3}{8}$	1.4687	$1\frac{5}{8}$	$1\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.004 -0.007	$\frac{3}{8}$	$\frac{3}{4}$	$1\frac{5}{8}$	1.7500	$2\frac{1}{8}$	$2\frac{1}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.004 -0.007	$1\frac{1}{8}$	$\frac{5}{8}$	$2\frac{1}{8}$	2.0156	$2\frac{3}{8}$	$2\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{4}$
	-0.004 -0.007	$1\frac{3}{8}$	$1\frac{1}{2}$	$2\frac{3}{8}$	2.2563	$2\frac{5}{8}$	$2\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$

(Continued on following page.)

Rod End Pins (Cont'd)

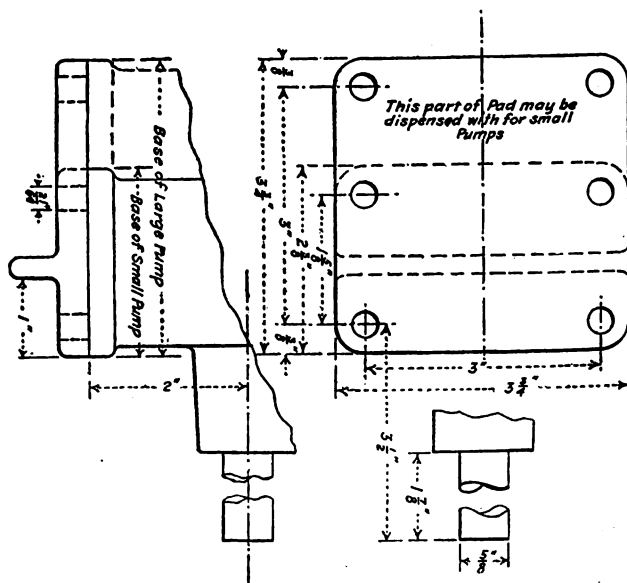
A	I	J	K	COTTER PIN		d = DRILL		DIFFERENCE	
				d ¹	L	No.	Dia.	d - d ¹	*d - d ¹ + k
$\frac{3}{16}$	0.4464	$\frac{3}{16}$	0.0089	$\frac{3}{16}$	$\frac{3}{16}$	48	0.076	0.0135	0.0224
$\frac{1}{4}$	0.6339	$\frac{1}{4}$	0.0089	$\frac{1}{4}$	$\frac{1}{4}$	48	0.076	0.0135	0.0224
$\frac{5}{16}$	0.7595	$\frac{5}{16}$	0.0095	$\frac{5}{16}$	$\frac{5}{16}$	36	0.106	0.0123	0.0224
$\frac{3}{8}$	0.8845	$\frac{3}{8}$	0.0095	$\frac{3}{8}$	$\frac{3}{8}$	36	0.106	0.0123	0.0218
$\frac{7}{16}$	1.0095	1	0.0095	$\frac{7}{16}$	$\frac{7}{16}$	36	0.106	0.0123	0.0218
$\frac{1}{2}$	1.1331	$\frac{1}{2}$	0.0081	$\frac{1}{2}$	$\frac{1}{2}$	28	0.140	0.0150	0.0231
$\frac{5}{8}$	1.3987	$\frac{5}{8}$	0.0237	$\frac{5}{8}$	1	28	0.140	0.0150	0.0231
$\frac{3}{4}$	1.6550	$\frac{3}{4}$	0.0300	$\frac{3}{4}$	$\frac{3}{4}$	11	0.191	0.0192	0.0335
$\frac{7}{8}$	1.9201	$\frac{7}{8}$	0.0451	$\frac{7}{8}$	$\frac{7}{8}$	11	0.191	0.0191	0.0642
1	2.1701	1	0.0451	1	1	11	0.191	0.0191	0.0642

All dimensions in inches. *Total clearance between yoke and cotter.

Tire-Pump Bases

S. A. E. Standard

In the tire-pump bases and pads shown in the accompanying sketch, the pads are to be $\frac{3}{4}$ in. square, with four $\frac{1}{4}$ -in. holes symmetrically located on 3-in. centers, and two additional

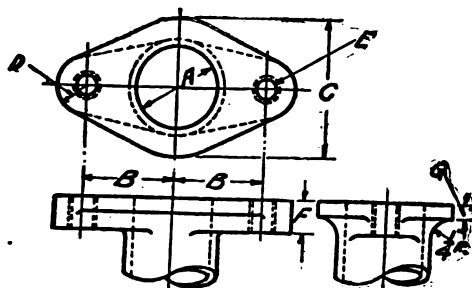


holes to be used with two of the original four for pumps with small bases. In case of small pumps the unused part of the base may be omitted. If a rib is used on the bottom of the pad, it is to be located as shown in order to clear the bolts in all six of the holes.

Index to Tables and Data Appears on Pages 1079 and 1080

Carbureter Fittings (S. A. E. Standard)

FLANGES

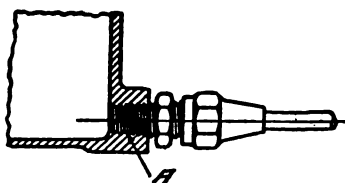


Carbureter Size	A	B	C	D	E *	F	G
3/4	15/16"	1 1/16"	1 5/8"	11/32"	5/16"x18 thr.	3/8"	1/8"
7/8	1 1/16"	1 1/8"	1 3/4"	11/32"	5/16"x18 thr.	3/8"	1/8"
1	1 3/16"	1 3/16"	1 7/8"	11/32"	5/16"x18 thr.	13/32"	5/32"
1 1/4	1 7/16"	1 11/32"	2 3/16"	13/32"	3/8" x16 thr.	15/32"	8/16"
1 1/2	1 11/16"	1 15/32"	2 1/2"	13/32"	3/8" x16 thr.	15/32"	3/16"
1 3/4	1 15/16"	1 21/32"	2 13/16"	15/32"	7/16"x14 thr.	9/16"	7/32"
2	2 3/16"	1 25/32"	3 1/8"	15/32"	7/16"x14 thr.	9/16"	7/32"

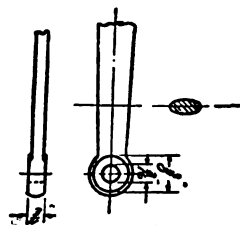
*U. S. Standard thread.

All dimensions in inches.

GASOLINE PIPE SIZES

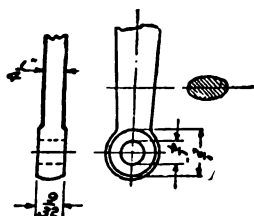


THROTTLE LEVERS



3/16" Rod end for carburetors up to 1 inch

Carbureter Size	A, Briggs Standard. Pipe Thread
3/4"	1/8"
7/8"	1/8"
1"	1/8"
1 1/4"	1/8"
1 1/2"	1/8"
1 3/4"	1/8"
2"	1/8"

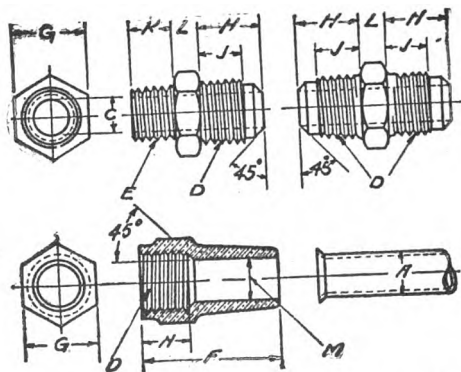


1/2" Rod end for carburetors of 1 1/4 to 2 inches inclusive

(Continued on page 1152)

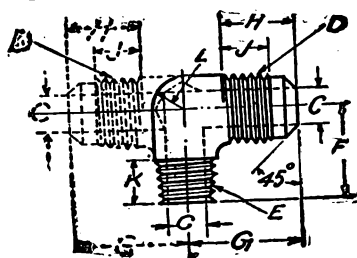
Carburetor Fittings (S. A. E. Standard) (Cont'd)

FLARED TUBE UNIONS



A	Pipe diameter.....	1/4	5/16	3/8	7/16	1/2
C	Bore, male part.....	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread.....	7/16x20	1/2x20	5/8x18	11/16x16	3/4x16
E	Pipe thread.....	1/8	1/8	1/4	1/4	3/8
F	.....	15/16	1 1/8	1 5/16	1 1/2	1 5/8
G	.....	9/16	5/8	3/4	13/16	7/8
H	.....	1/2	9/16	5/8	11/16	3/4
I	Thread only.....	11/32	3/8	13/32	7/16	1/2
J	Thread only.....	3/8	3/8	7/16	7/16	1/2
K	.....	3/16	7/32	1/4	9/32	5/16
L	Bore, female part.....	0.255-	0.317-	0.380-	0.442-	0.505-
M	.....	0.260	0.322	0.385	0.447	0.510
N	.....	11/32	3/8	7/16	1/2	9/16

FLARED TUBE ELLS AND TEES



A	Tube diameter.....	1/4	5/16	3/8	7/16	1/2
C	Drill diameter.....	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread.....	7/16x20	1/2x20	5/8x18	11/16x16	3/4x16
E	Briggs std. pipe thread.....	1/8	1/8	1/4	1/4	3/8
F	Center to face.....	3/4	3/4	7/8	15/16	1
G	Center to face.....	7/8	15/16	1	1 1/8	1 3/10
H	.....	1/2	9/16	5/8	11/16	3/4
I	Thread only.....	11/32	3/8	13/32	7/16	1/2
J	Thread only.....	3/8	3/8	7/16	7/16	1/2
K	Radius.....	1/8	1/4	9/32	5/16	11/32

All dimensions on this sheet in inch measure

Index to Tables and Data Appears on Pages 1079 and 1080

Automobile Engine Light Lubricating Oil

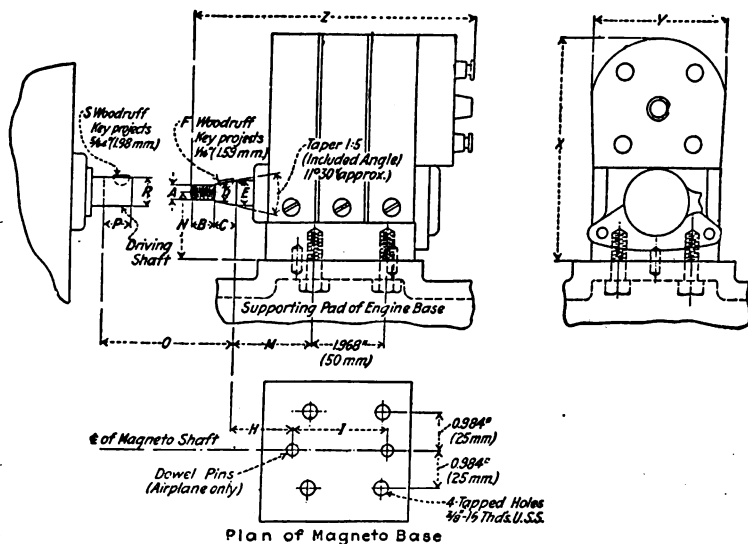
Pure mineral oil. The following characteristics are desired:

Specific gravity.....	28° to 32° Baumé
Flash point, not less than.....	400° F.
Fire test, not less than.....	450° F.
Viscosity at 100° F., Saybolt viscosimeter, not over.....	300 seconds.
Viscosity at 210° F., Saybolt viscosimeter.....	40 to 50 seconds
Viscosity at 210° F., Tagliabue viscosimeter.....	60 to 65 seconds
Carbon residue, not over.....	0.50 per cent.

Magneto Dimensions

S. A. E. Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR



When it is desired to use a non-magnetic shim with magnetoes mounted on cast iron pads the shims shall be $\frac{1}{8}$ in. thick, and high strength bronze bolts used. The thickness of the shim shall be added to the dimension *N* on the drawing when laying out the distance from the face of the mounting pad to the center of the magneto shaft. A grid construction may be used for the shims.

FLEXIBLE DISK COUPLINGS

The following dimensions are recommended for flexible disk couplings for all magneto drives, including impulse type, and generators.

Outside diameter of disk $2\frac{3}{4}$ in., inside diameter of disk 1 in., diameter of bolt circle 2 in thickness of disk $\frac{1}{4}$ in., number of $\frac{1}{4}$ -in. bolts equally spaced 4.

Index to Tables and Data Appears on Pages 1079 and 1080

Magnetos Dimensions

S. A. E. Standard and Recommended Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR

		4 AND 6 CYL.		8 AND 12 CYL.		MOTORCYCLE	
		Inch	Mm.	Inch	Mm.	Inch	Mm.
U. S. S. Threads							
A		$\frac{1}{8}$ "-16	9.53-	$\frac{1}{8}$ "-16	9.53-	$\frac{1}{8}$ "-18	7.94-
		thds.	1.58	thds.	1.58	thds.	1.41
B		.5905	15	.5905	15	.4170	10.59
C		.590	14.98	.590	14.98	.3543	9
D		.472	12	.472	12	.4409	11.20
E		.590	14.98	.590	14.98	.5118	13
F Woodruff Key (Dia. X thickness)		No. 3	No. 3	No. 3	No. 3	Special	Special
		$\frac{1}{2} \times \frac{1}{2}$	12.7x 3.18	$\frac{1}{2} \times \frac{1}{2}$	12.7x 3.18	$\frac{1}{2} \times \frac{1}{2}$	7.94x 2.38
H		No std.	.....	1.693	43	No std.	.....
I		No std.	.....	2.519	63.98	No std.	.....
M		2.086	52.98	2.086	52.98	1.553	39.45
N		1.771	44.98	1.968	50	1.771	44.98
*†O		2.375	60.32	2.375	60.32	No std.	.....
*†P		.75	19.05	.75	19.05	No std.	.....
*††R (limits)		.750 .749	19.06 19.04	.750 .749	19.05 19.02	No std.	.....
Coupling Bore..... (limits)		.7505 .7495	19.06 19.04	.7505 .7495	19.06 19.04	No std.	.....
‡S Woodruff Key (Dia. X thickness)		No. 8	No. 8	No. 8	No. 8	No std.	.....
		$\frac{1}{2} \times \frac{1}{2}$	19.05x 3.97	$\frac{1}{2} \times \frac{1}{2}$	19.05x 3.97	No std.	.....
Magnetos Space (Max.)	X	8.000	203.20	9.000	228.60	6.000	152.40
	Y	5.000	127.00	5.000	127.00	3.750	95.25
	Z	10.000	254.00	10.000	254.00	6.375	161.93
Width at Brushes	W	No std.	.....	No std.	.....	4.000	101.60
Adv. Lever Rad.		2.125	53.97	No std.	.....	1.968	50
Timing Lever Holes	Tapped S. A. E.	$\frac{1}{8}$ "-28	6.35-.9	No std.	.....	No std.	.....
	Plain	.25	6.35	No std.	.....	.2185	5.55
Dowels (Airplane Only)	Diam.	$\frac{1}{8}$ +.002 -.002	7.94 +.05 -.00	$\frac{1}{8}$ +.002 -.002	7.94 +.05 -.00	No std.	.....
	Depth	$\frac{1}{8}$	7.94	$\frac{1}{8}$	7.94	No std.	.....

*Provides for Impulse Couplings for tractors. Conforms to National Gas Engine Association standard.

†Recommended material for drive-shaft is selected cold-rolled stock.

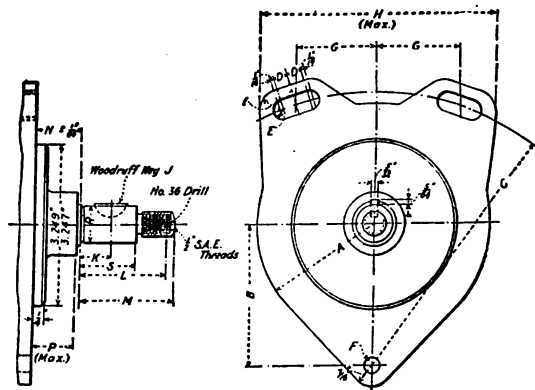
‡Not for use in airplanes.

Flange Mountings for Generators

Gear or Chain Drive

S. A. E. Standard

There are two standard sizes of generator flanges as shown. Each is provided with a pilot for locating in a bored hole when used with a gear drive and with slotted holes to allow for adjustment when used with chain drive. In the latter case the hole in the gear case will be made to clear the pilot.



Size No.	A	B	C	D	E	F	G	H	I
1	$2\frac{1}{8}$	$2\frac{13}{16}$	$5\frac{1}{8}$	$\frac{1}{4}$	$\frac{7}{32}$	$\frac{13}{32}$	$1\frac{1}{8}$	$4\frac{3}{8}$	$\frac{7}{16}$
2	$2\frac{5}{8}$	$3\frac{1}{16}$	$5\frac{7}{8}$	$\frac{5}{16}$	$\frac{1}{4}$	$\frac{15}{32}$	$1\frac{13}{16}$	$5\frac{3}{8}$	$\frac{1}{2}$

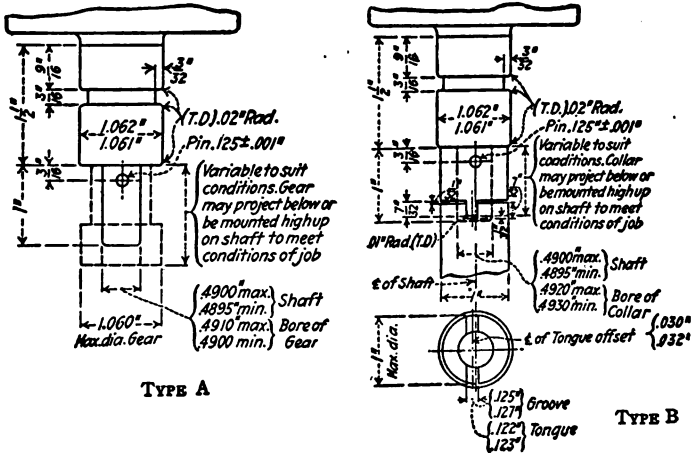
Size No.	J	K	L	M	N	P	R	S
1	6	$\frac{9}{16}$	$1\frac{17}{32}$	$1\frac{1}{16}$	$\frac{1}{16}$	$\frac{3}{4}$	0.6250 0.6245	1
2	8	$1\frac{1}{16}$	$1\frac{25}{32}$	$1\frac{1}{16}$	$\frac{1}{16}$	1	0.7500 0.7495	$1\frac{1}{4}$

Index to Tables and Data Appears on Pages 1079 and 1080

Ignition Distributor Mounting

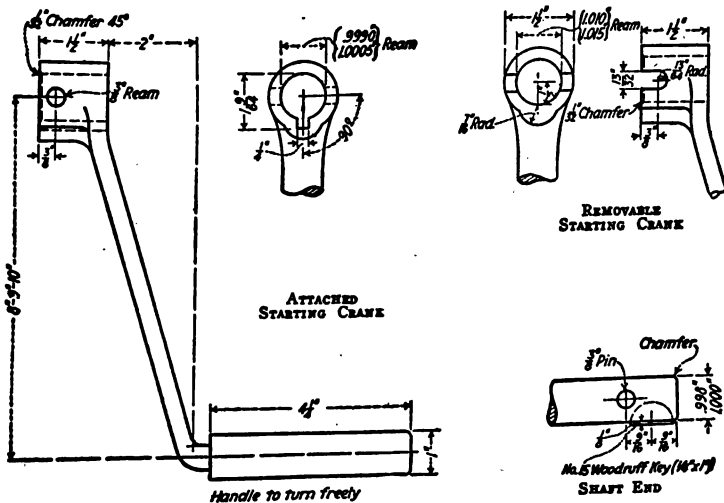
S. A. E. Standard

The ignition distributor mounting dimensions shown are suitable for use when the distributor is mounted on either the generator or the engine.



Attached and Removable Starting Cranks

S. A. E. Standard



No Woodruff key is to be provided in shafts for removable starting cranks.

Index to Tables and Data Appears on Pages 1079 and 1080

Lock Washer Dimensions (S. A. E. Standard)

The outside diameters of lock washers shall coincide practically with the long diameters of S. A. E. Standard nuts, which are approximately the short diameters of United States Standard nuts.

The inside diameters of the lock washers shall be from 164" to 132" larger than bolt diameters. All lock washers shall be parallel-faced sections; and bulging or malformed ends must be avoided.

Table of Sizes
Automobile Heavy (A. H.)
For General Use

Bolt Diameter	Lock Washer Section	Bolt Diameter	Lock Washer Section
3/16"	1/16" x 1/16"	11/16"	1/4" x 1/4"
1/4"	5/64" x 5/64"	3/4"	1/4" x 1/4"
5/16"	1/8" x 1/8"	7/8"	17/64" x 17/64"
3/8"	1/8" x 1/8"	1"	5/16" x 5/16"
7/16"	11/64" x 11/64"	1 1/8"	5/16" x 5/16"
1/2"	11/64" x 11/64"	1 1/4"	3/8" x 3/8"
9/16"	13/64" x 13/64"	1 3/8"	3/8" x 3/8"
5/8"	13/64" x 13/64"	1 1/2"	7/16" x 7/16"

Automobile Light (A. L.)
For Optional Use Against Soft Metal

Bolt Diameter	Lock Washer Section
3/16"	1/16" x 3/64"
1/4"	5/64" x 1/16"
5/16"	1/8" x 3/32"
3/8"	1/8" x 3/32"
7/16"	11/64" x 1/8"
1/2"	11/64" x 1/8"
9/16"	13/64" x 5/32"
5/8"	13/64" x 5/32"
11/16"	1/4" x 3/16"
3/4"	1/4" x 3/16"
7/8"	17/64" x 3/16"
	5/16" x 1/4"

Test

Temper

After compression to flat, reaction shall be sufficient to indicate necessary spring power, and on a subsequent compression to flat the lock washer shall manifest no appreciable loss in reaction.

Toughness

Forty-five per cent. of the lock washer, including one end, shall be firmly secured in a vise and forty-five per cent., including the other end, shall be secured firmly between parallel jaws of a wrench. Movement of the wrench at right angle to helical curve shall twist the lock washer through forty-five degrees without sign of fracture; and shall twist the lock washer entirely apart within one hundred and thirty-five degrees.

Oversize Cylinders (S. A. E. Standard)

There has hitherto existed no uniform practice as to the amount of metal removed in regrounding worn cylinders, with the result that difficulty is experienced in securing new pistons of correct size, from the manufacturers.

With a view to eliminating all unnecessary expense and delay, the following standards have been accepted by the Society:—

Ten Thousandths	(.010")	inch large for first oversize standard
Twenty	(.020")	" " " second " "
Thirty	(.030")	" " " third " "
Forty	(.040")	" " " fourth " "

Index to Tables and Data Appears on Pages 1079 and 1080

SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (S. A. E. Standard) LIGHT SERIES

Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF INNER RACE		ECCENTRICITY TOLERANCE IN INCHES				
	Mm	Inches	TOLERANCE IN INCHES		Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)		Mm	Inches	Inner Race	Outer Race				
			Plus	Minus			Inches	Plus					Minus			
200	10	0.39370	0.0002	0.0004	30	1.18110	0	0.0005	9	0.35433	0	0.005	1	0.04	0.0005	0.0012
201	12	0.47244	0.0002	0.0004	32	1.25984	0	0.0005	10	0.39370	0	0.005	1	0.04	0.0006	0.0012
202	15	0.59055	0.0002	0.0004	35	1.37795	0	0.0005	11	0.43307	0	0.005	1	0.04	0.0006	0.0012
203	17	0.66929	0.0002	0.0004	40	1.57481	0	0.0005	12	0.47244	0	0.005	1	0.04	0.0006	0.0012
204	20	0.78740	0.0002	0.0004	47	1.85040	0	0.0005	14	0.55118	0	0.005	1	0.04	0.0006	0.0012
205	25	0.98425	0.0002	0.0004	52	2.04725	0	0.0008	15	0.59055	0	0.005	1	0.04	0.0008	0.0012
206	30	1.18110	0.0002	0.0004	62	2.44095	0	0.0008	16	0.62992	0	0.005	1	0.04	0.0008	0.0012
207	35	1.37795	0.0002	0.0004	72	2.83465	0	0.0008	17	0.66929	0	0.005	1	0.04	0.0008	0.0012
208	40	1.57481	0.0002	0.0004	80	3.14962	0	0.0008	18	0.70866	0	0.005	2	0.08	0.0008	0.0012
209	45	1.77166	0.0002	0.0004	85	3.34647	0	0.0008	19	0.74803	0	0.005	2	0.08	0.0010	0.0016
210	50	1.96851	0.0002	0.0004	90	3.54332	0	0.0008	20	0.78740	0	0.005	2	0.08	0.0010	0.0016
211	55	2.16536	0.0002	0.0004	100	3.93702	0	0.0008	21	0.82677	0	0.005	2	0.08	0.0010	0.0016
212	60	2.36221	0.0002	0.0005	110	4.33072	0	0.0008	22	0.86614	0	0.005	2	0.08	0.0010	0.0016
213	65	2.55906	0.0002	0.0005	120	4.72443	0	0.0008	23	0.90551	0	0.005	2	0.08	0.0010	0.0016
214	70	2.75591	0.0002	0.0005	125	4.92128	0	0.0008	24	0.94488	0	0.005	2	0.08	0.0010	0.0016
215	75	2.95277	0.0002	0.0005	130	5.11813	0	0.0008	25	0.98425	0	0.005	2	0.08	0.0010	0.0016
216	80	3.14962	0.0002	0.0005	140	5.51183	0	0.0008	26	1.02362	0	0.005	3	0.12	0.0012	0.0018
217	85	3.34647	0.0002	0.0006	150	5.90554	0	0.0012	28	1.10236	0	0.005	3	0.12	0.0012	0.0018
218	90	3.54332	0.0002	0.0006	160	6.29924	0	0.0012	30	1.18110	0	0.005	3	0.12	0.0012	0.0018
219	95	3.74017	0.0002	0.0006	170	6.69294	0	0.0012	32	1.25984	0	0.005	3	0.12	0.0012	0.0018
220	100	3.93702	0.0002	0.0006	180	7.08664	0	0.0012	34	1.33858	0	0.005	3	0.12	0.0012	0.0018
221	105	4.13387	0.0002	0.0006	190	7.48035	0	0.0012	36	1.41732	0	0.005	3	0.12	0.0012	0.0018
222	110	4.33072	0.0002	0.0006	200	7.87405	0	0.0012	38	1.49607	0	0.005	3	0.12	0.0012	0.0018

Index to Tables and Data Appears on Pages 1079 and 1080

SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (S. A. E. Standard)
MEDIUM SERIES

Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF INNER RACE		ECCENTRICITY TOLERANCE IN INCHES		
	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)		Mm	Inches	Inner Race	Outer Race
									Plus	Minus					Plus	Minus
			Plus			Minus			Plus	Minus				
300	10	0.39370	0.0002	0.0004	35	1.37795	0	0.0005	0	0.43307	1	0.04	0.0006	0.0012
301	12	0.47244	0.0002	0.0004	37	1.45669	0	0.0005	0	0.47244	1	0.04	0.0006	0.0012
302	15	0.59055	0.0002	0.0004	42	1.65355	0	0.0005	0	0.51181	1	0.04	0.0006	0.0012
303	17	0.66929	0.0002	0.0004	47	1.85040	0	0.0005	0	0.55118	1	0.04	0.0006	0.0012
304	20	0.78740	0.0002	0.0004	52	2.04725	0	0.0008	0	0.59055	1	0.04	0.0006	0.0012
305	25	0.98425	0.0002	0.0004	62	2.44095	0	0.0008	0	0.66929	1	0.04	0.0008	0.0012
306	30	1.18110	0.0002	0.0004	72	2.83465	0	0.0008	0	0.74803	2	0.08	0.0008	0.0012
307	35	1.37795	0.0002	0.0004	80	3.14962	0	0.0008	0	0.82677	2	0.08	0.0008	0.0012
308	40	1.57481	0.0002	0.0004	90	3.54332	0	0.0008	0	0.90551	2	0.08	0.0008	0.0012
309	45	1.77166	0.0002	0.0004	100	3.93702	0	0.0008	0	0.98425	2	0.08	0.0010	0.0016
310	50	1.96851	0.0002	0.0004	110	4.33072	0	0.0008	0	1.06299	2	0.08	0.0010	0.0016
311	55	2.16536	0.0002	0.0004	120	4.72443	0	0.0008	0	1.14173	2	0.08	0.0010	0.0016
312	60	2.36221	0.0002	0.0005	130	5.11813	0	0.0008	0	1.22047	2	0.08	0.0010	0.0016
313	65	2.55906	0.0002	0.0005	140	5.51183	0	0.0008	0	1.29921	3	0.12	0.0010	0.0016
314	70	2.75591	0.0002	0.0005	150	5.90554	0	0.0012	0	1.37795	3	0.12	0.0010	0.0016
315	75	2.95277	0.0002	0.0005	160	6.29924	0	0.0012	0	1.45669	3	0.12	0.0010	0.0016
316	80	3.14962	0.0002	0.0005	170	6.69294	0	0.0012	0	1.53544	3	0.12	0.0012	0.0018
317	85	3.34647	0.0002	0.0006	180	7.08664	0	0.0012	0	1.61418	3	0.12	0.0012	0.0018
318	90	3.54332	0.0002	0.0006	190	7.48035	0	0.0012	0	1.69292	3	0.12	0.0012	0.0018
319	95	3.74017	0.0002	0.0006	200	7.87405	0	0.0012	0	1.77166	3	0.12	0.0012	0.0018
320	100	3.93702	0.0002	0.0006	215	8.46460	0	0.0012	0	1.85040	3	0.12	0.0012	0.0018
321	105	4.13387	0.0002	0.0006	225	8.85830	0	0.0012	0	1.92914	3	0.12	0.0012	0.0018
322	110	4.33072	0.0002	0.0006	240	9.44886	0	0.0012	0	1.96851	3	0.12	0.0012	0.0018

Index to Tables and Data Appears on Pages 1079 and 1080

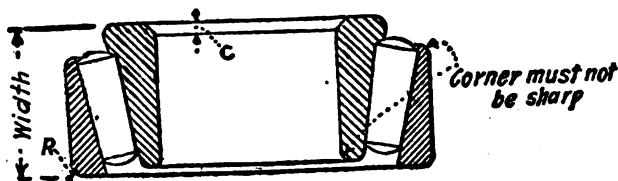
SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (S. A. E. Standard)
HEAVY SERIES

Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF INNER RACE			ECCENTRICITY TOLERANCE IN INCHES		
	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)		Mm	Inches	Inner Race	Outer Race	
									Plus	Minus					Plus	Minus
			Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	
			Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	Minus
403	17	0.66929	0.0002	0.0004	62	2.44095	0	0.0008	0	0.0008	17	0.66929	0	0.0006	0.0012
404	20	0.78740	0.0002	0.0004	72	2.83465	0	0.0008	0	0.0008	19	0.74803	0	0.0006	0.0012
405	25	0.98425	0.0002	0.0004	80	3.14962	0	0.0008	0	0.0008	21	0.82677	0	0.0008	0.0012
406	30	1.18110	0.0002	0.0004	90	3.54332	0	0.0008	0	0.0008	23	0.90551	0	0.0008	0.0012
407	35	1.37795	0.0002	0.0004	100	3.93702	0	0.0008	0	0.0008	25	0.98425	0	0.0008	0.0012
408	40	1.57481	0.0002	0.0004	110	4.33072	0	0.0008	0	0.0008	27	1.06299	0	0.0008	0.0012
409	45	1.77166	0.0002	0.0004	120	4.72443	0	0.0008	0	0.0008	29	1.14173	0	0.0010	0.0016
410	50	1.96851	0.0002	0.0004	130	5.11813	0	0.0008	0	0.0008	31	1.22047	0	0.0010	0.0016
411	55	2.16536	0.0002	0.0004	140	5.51183	0	0.0008	0	0.0008	33	1.29921	0	0.0010	0.0016
412	60	2.36221	0.0002	0.0005	150	5.90554	0	0.0012	0	0.0012	35	1.37795	0	0.0010	0.0016
413	65	2.55906	0.0002	0.0005	160	6.29924	0	0.0012	0	0.0012	37	1.45669	0	0.0010	0.0016
414	70	2.75591	0.0002	0.0005	180	7.08664	0	0.0012	0	0.0012	42	1.65355	0	0.0010	0.0016
415	75	2.95277	0.0002	0.0005	190	7.48035	0	0.0012	0	0.0012	45	1.77166	0	0.0010	0.0016
416	80	3.14962	0.0002	0.0005	200	7.87405	0	0.0012	0	0.0012	48	1.88977	0	0.0010	0.0016
417	85	3.34647	0.0002	0.0006	210	8.26775	0	0.0012	0	0.0012	52	2.04725	0	0.0012	0.0018
418	90	3.54332	0.0002	0.0006	225	8.85830	0	0.0012	0	0.0012	54	2.12599	0	0.0012	0.0018
419	95	3.74017	0.0002	0.0006	250	9.84256	0	0.0012	0	0.0012	55	2.16536	0	0.0012	0.0018
420	100	3.93702	0.0002	0.0006	265	10.43311	0	0.0012	0	0.0012	60	2.36221	0	0.0012	0.0018

*A chamfer of 45 degrees ground true with the bore and outside diameter is recommended.

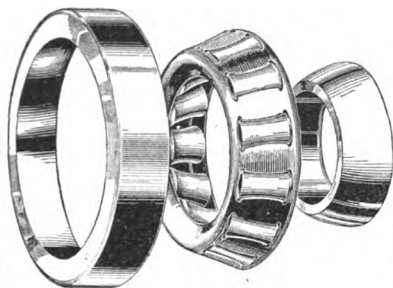
* A chamfer of 45 degrees ground true with the bore and outside diameter is recommended.

Roller Bearings
Narrow and Wide Series
S. A. E. Standard Sizes and Tolerances
(Adopted in August, 1916)



Bearing Number	BORE				DIAMETER				WIDTH				CHAMFER C NOT LESS THAN		RADIUS R				ECCENTRICITY TOLERANCE IN INCHES	
	Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	Mm.	In.	Inner Race	Outer Race		
			Plus	Minus			Plus	Minus			Plus	Minus								
RM 204...	20	.78740	.0002	.0004	47	1.85040	0	.0006	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012		
RM 205...	25	.98425	.0002	.0006	52	2.04725	0	.0008	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012		
RM 206...	30	1.18110	.0002	.0006	62	2.44095	0	.0008	19.05	¾	.020	.020	1	.04	1	.04	.0008	.0012		
RM 207...	35	1.37795	.0002	.0006	72	2.83465	0	.0008	22.22	¾	.020	.020	1	.04	1	.04	.0008	.0012		
RM 208...	40	1.57481	.0002	.0006	80	3.14962	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0008	.0012		
RM 209...	45	1.77166	.0002	.0006	85	3.34647	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0010	.0016		
RM 210...	50	1.96851	.0002	.0006	90	3.54332	0	.0008	25.40	1	.020	.020	2	.08	2	.08	.0010	.0016		
RM 211...	55	2.16536	.0002	.0006	100	3.93702	0	.0008	30.16	1½	.020	.020	2	.08	2	.08	.0010	.0016		
RM 212...	60	2.36221	.0002	.0006	110	4.33072	0	.0008	34.92	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 213...	65	2.55906	.0002	.0006	120	4.72443	0	.0008	34.92	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 214...	70	2.75591	.0002	.0006	125	4.92128	0	.0008	38.51	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 215...	75	2.95277	.0002	.0006	130	5.11813	0	.0008	38.51	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 216...	80	3.14962	.0002	.0006	140	5.51183	0	.0008	41.27	1¾	.020	.020	3	.12	3	.12	.0012	.0018		
RM 217...	85	3.34647	.0002	.0007	150	5.90554	0	.0012	44.45	1¾	.020	.020	3	.12	3	.12	.0012	.0018		
RM 218...	90	3.54332	.0002	.0007	160	6.29924	0	.0012	50.80	2	.020	.020	3	.12	3	.12	.0012	.0018		
RM 219...	95	3.74017	.0002	.0007	170	6.69294	0	.0012	55.56	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 220...	100	3.93702	.0002	.0007	180	7.08664	0	.0012	60.32	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 221...	105	4.13387	.0002	.0007	190	7.48035	0	.0012	65.09	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 222...	110	4.33072	.0002	.0007	200	7.87405	0	.0012	69.85	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 304...	20	.78740	.0002	.0006	52	2.04725	0	.0008	22.22	¾	.020	.020	1	.04	1	.04	.0008	.0012		
RM 305...	25	.98425	.0002	.0006	62	2.44095	0	.0008	25.40	1	.020	.020	1	.04	1	.04	.0008	.0012		
RM 306...	30	1.18110	.0002	.0006	72	2.83465	0	.0008	30.16	1½	.020	.020	2	.08	2	.08	.0008	.0012		
RM 307...	35	1.37795	.0002	.0006	80	3.14962	0	.0008	34.92	1¾	.020	.020	2	.08	2	.08	.0008	.0012		
RM 308...	40	1.57481	.0002	.0006	90	3.54332	0	.0008	36.51	1¾	.020	.020	2	.08	2	.08	.0008	.0012		
RM 309...	45	1.77166	.0002	.0006	100	3.93702	0	.0008	39.69	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 310...	50	1.96851	.0002	.0006	110	4.33072	0	.0008	44.45	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 311...	55	2.16536	.0002	.0006	120	4.72443	0	.0008	49.21	1¾	.020	.020	2	.08	2	.08	.0010	.0016		
RM 312...	60	2.36221	.0002	.0006	130	5.11813	0	.0008	53.97	2¼	.020	.020	2	.08	2	.08	.0010	.0016		
RM 313...	65	2.55906	.0002	.0006	140	5.51183	0	.0008	58.74	2½	.020	.020	3	.12	3	.12	.0010	.0016		
RM 314...	70	2.75591	.0002	.0007	150	5.90554	0	.0012	63.50	2½	.020	.020	3	.12	3	.12	.0010	.0016		
RM 315...	75	2.95277	.0002	.0007	160	6.29924	0	.0012	68.26	2½	.020	.020	3	.12	3	.12	.0010	.0016		
RM 316...	80	3.14962	.0002	.0007	170	6.69294	0	.0012	73.02	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 317...	85	3.34647	.0002	.0007	180	7.08664	0	.0012	73.02	2½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 318...	90	3.54332	.0002	.0007	190	7.48055	0	.0012	77.79	3½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 319...	95	3.74017	.0002	.0007	200	7.87405	0	.0012	77.79	3½	.020	.020	3	.12	3	.12	.0012	.0018		
RM 320...	100	3.93702	.0002	.0007	215	8.46460	0	.0012	82.55	3½	.020	.020	3	.12	3	.12	.0012	.0018		

Index to Tables and Data Appears on Pages 1079 and 1080



Replacements Now Ready for Front Wheels

Overland.
Dodge—all models.
Maxwell—1914-15-16
17-18-19-20.
Oakland—34, 34B.
Dort—5A, 6, 9, 29, 8,
11, 15.
Chevrolet—F, FA,
Baby Grand, 490; H.
Roamer—all models
except 1920.
Allen—37-41-1916-'17-
'18.
Vim Truck—20, 21.
Auburn—1916-17-18-19.
Ford—all models.
Scripps-Booth—39.
Briscoe—all models.
Buick—45, 1916-17.
Nash-Jeffery—'16 to
'20 inclusive.
Lexington—6-0-17.
Also standard annu-
lar bearings Nos.
305-306-307-308-210.
Davis—38; 6FG: H, I,
K, L, P.
Elgin—1916.
Elcar—1916.
All-American Truck
—1917 (one-ton).
Velie—22, 1917.
Moon—1917.
Hupmobile—R1, R2,
R3, R4.
King—D '15, '16.
Stearns—L4 '15-16-17;
S. K. 8, '16-17.
Paige—6-39 (P-18).
6-38; 6-48.

In Shafer bearings misalignment is impossible, for wear and break-down through improper fitting never occurs. The cone fits into a nest of rollers and is permitted free motion in any direction without losing contact. It rides with the spindle and automatically compensates for any spindle deflection. The action is similar to that of universal joint and provides positive correction for any misalignment.

Shafer's never twist or "climb" when under load. The concave roller, as the diagram shows, is always in full length contact with the convex cup and cone and this natural alignment is maintained no matter what the variation in load or from what angle received.

A slight lateral movement of either cup or cone constitutes a perfect adjustment for such slight wear as may occur through long, heavy service. Shafer's have proved their superior merit through a long series of road and break-down tests. They merit consideration wherever a friction eliminant is required. Send us your specifications.

SHAFER BEARING CORP. 4500 Ravenswood Avenue CHICAGO, ILLINOIS

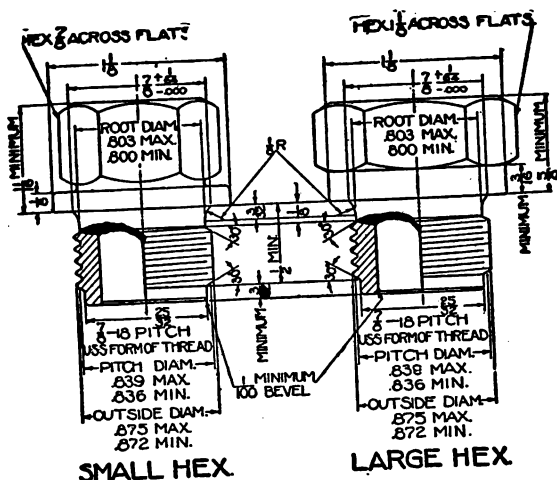


Kline Car—6-38 F;
6-38 CA, 6-42 H.
Franklin—1917-21
(incl.).
Milburn—'17-18.
Pathfinder—'13-14-15
(715).
Pilot—6-45, 1918.
Empire—1918.
Holmes—6-38, 1916.
348.
Miami Trailer—10, '18-
'19.
Lexington—6-0-18
(1917).
Abbott—6-44; '18.
Commerce—E (1-ton)
'16-'17-'18-'19.
Mar Handley—'17.
Haynes—30 to 37 (15-
16-17), 6 & 12 ('16-
'17), light C. '17.
Imperial—44, '13.
American—'12-'13.
Interstate—40, 41, 42.
Mitchell—1910-14
(incl.).
R. C. H.—'13-'14.
Indiana Truck—Mod.
S. '16-'17; Mod. T
(1-ton) '17.
Kissel Truck—1¼-ton
'17-'18.
Scripps-Booth—D '17.
Also supplied inter-
changeable with
standard makes of
ball and roller type.

Geo. D. Bailey Co.
Service Division
4504 Ravenswood
Avenue
Chicago, Illinois

Self Aligning
SHAFAER Roller
Bearing
100% Load Capacity From Any Angle

SPARK PLUG SHELL (S. A. E. Standard)



All dimensions below shoulder are identical for both spark plug shells.

If spark plug taps are made to dimensions shown in the accompanying table, the plugs can be turned in by hand, using a wrench only for final tightening.

THREAD FOR SPARK PLUG TERMINALS
NO. 8-32 (0.164 IN. DIA.) A. S. M. E. STANDARD

	Nominal Dimension	THREAD LIMITS	
		Spark Plug	Tap
Outside diameter	.875	.872 Min. .875 Max.	.877 Min. .879 Max.
Pitch diameter	.839	.836 Min. .839 Max.	.841 Min. .843 Max.
Root diameter	.803	.800 Min. .803 Max.	.805 Min. .807 Max.

Tap Drill Diameter
Nominal $\frac{1}{8}$ = .8125
.810 Min. .813 Max.

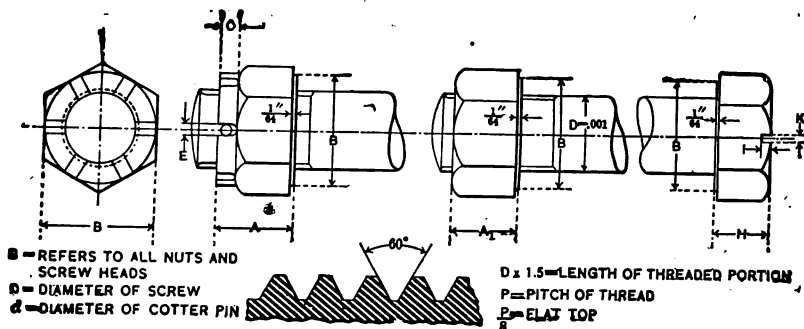
All dimensions in inches.

Index to Tables and Data Appears on Pages 1079 and 1080

HEXAGON HEAD SCREWS, CASTLE AND PLAIN NUTS (S. A. E. Standard)

It is assumed that where screws are to be used in soft material, such as cast-iron, brass, bronze or aluminum, the United States standard pitches will be used

DIMENSIONS



D	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
P	28	24	24	20	20	18	18	16	16	14	14	12	12	12	12
A	3/32	2 1/64	1 3/32	2 3/64	3/16	3 9/64	2 3/32	4 9/64	1 3/16	2 3/32	1	1 5/32	1 1/4	1 13/32	1 1/2
A ¹	7/32	1 7/64	2 1/64	3/8	7/16	3 1/64	3 5/64	1 9/32	2 1/32	4 9/64	7/8	3 3/64	1 3/32	1 13/64	1 9/16
B	7/16	1/2	9/16	5/8	3/4	7/8	1 5/16	1	1 1/16	1 1/4	1 7/16	1 5/8	1 13/16	2	2 3/16
C	3/32	3/32	1/8	1/8	3/16	3/16	1/4	1/4	1/4	1/4	1/4	5/16	5/16	3/8	3/8
E	5/64	5/64	1/8	1/8	1/8	5/32	5/32	5/32	5/32	5/32	5/32	7/32	7/32	1/4	1/4
H	3/16	1 5/64	3/32	2 1/64	3/8	2 7/64	1 5/32	3 3/64	3/16	2 1/32	3/4	2 7/32	1 5/16	1 13/32	1 1/8
I	3/32	7/64	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	7/32	7/32	1/4	1/4
K	1/16	1/16	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	5/32	5/32	3/16	3/16
d	1/16	1/16	3/32	3/32	3/32	1/8	1/8	1/8	1/8	1/8	1/8	1 1/64	1 1/64	1 3/64	1 3/64

Dimensions. All dimensions in inches.

Finish. All heads and nuts to be semi-finish.

Material. For all screws and nuts—steel.

Screws are to be left soft. Screw heads are to be left soft. The plain nuts are to be left soft. The Castle nuts are to be case-hardened.

LARGE DIAMETER THREAD (S. A. E. Standard)

Diameter, Inches	PITCH		Diameter, Inches	PITCH	
	Coarse	Fine		Coarse	Fine
$1\frac{1}{8}$	12	16	$3\frac{7}{8}$	10	16
$1\frac{1}{4}$	12	16	4	10	16
$1\frac{3}{8}$	12	16	$4\frac{1}{8}$	10	16
2	12	16	$4\frac{1}{4}$	10	16
$2\frac{1}{8}$	12	16	$4\frac{3}{8}$	10	16
$2\frac{1}{4}$	12	16	$4\frac{1}{2}$	10	16
$2\frac{3}{8}$	12	16	$4\frac{5}{8}$	10	16
$2\frac{1}{2}$	12	16	$4\frac{3}{4}$	10	16
$2\frac{5}{8}$	12	16	$4\frac{7}{8}$	10	16
$2\frac{3}{4}$	12	16	5	10	16
$2\frac{7}{8}$	12	16	$5\frac{1}{8}$	10	16
3	10	16	$5\frac{1}{4}$	10	16
$3\frac{1}{8}$	10	16	$5\frac{3}{8}$	10	16
$3\frac{1}{4}$	10	16	$5\frac{1}{2}$	10	16
$3\frac{3}{8}$	10	16	$5\frac{5}{8}$	10	16
$3\frac{1}{2}$	10	16	$5\frac{3}{4}$	10	16
$3\frac{5}{8}$	10	16	$5\frac{7}{8}$	10	16
$3\frac{3}{4}$	10	16	6 & over	8	16

All threads to be U. S. S. form.

Useful Functions of π The numerical values of the most frequently occurring combinations of π are given in the following table:

$\pi = 3.14159265$	$\frac{\pi}{7} = 0.44879895$	$\pi^2 = 9.86960440$	$\sqrt{\pi} = 1.77245385$
$\frac{\pi}{2} = 1.57079633$	$\frac{\pi}{16} = 0.19634954$	$\pi^3 = 31.00627668$	$^3\sqrt{\pi} = 1.46459189$
$\frac{\pi}{3} = 1.04719755$	$\frac{\pi}{24} = 0.13089969$	$\frac{1}{\pi} = 0.31830989$	$\frac{1}{\sqrt{\pi}} = 0.56418958$
$\frac{\pi}{4} = 0.78539816$	$\frac{\pi}{32} = 0.09817477$	$\frac{1}{\pi^2} = 0.10132118$	$\frac{1}{^3\sqrt{\pi}} = 0.68278406$
$\frac{\pi}{6} = 0.52359878$	$\frac{\pi}{180} = 0.01754329$	$\frac{1}{\pi^3} = 0.03225153$	$\text{Log } \pi = 0.49714987$

Gasoline of 64° Beaumé has a specific gravity of .72, and consequently weighs 5.96 pounds per gallon.

A British Thermal Unit represents the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39° F. Its symbol is B. T. U. There are 778 foot-pounds in a B. T. U. and 42.4 B. T. U. to a horsepower.

Index to Tables and Data Appears on Pages 1079 and 1080

NATIONAL AUTOMOBILE AND ALLIED ORGANIZATIONS

National Automobile Chamber of Commerce, Inc.

366 Madison Ave., at 46th St., New York, N. Y.

Objects: To foster the interests of those engaged in the trade or business of manufacturing automobiles and all other self-propelling vehicles.

To reform abuses relative thereto.

To secure freedom of its members from unjust or unlawful exactions.

To diffuse accurate and reliable information as to the standing of merchants and others dealing with members as to all inventions, patents, processes or devices designed or intended for use in, upon, or in connection with such vehicles and the manufacture thereof, as to the state of the art relative thereto, and as to the condition and development of the trade in which the members are engaged, in the United States and foreign countries.

To procure uniformity and certainty in the customs and usages of such trade.

To promote the construction of better highways.

To advocate the enactment of just and equitable laws affecting members.

To settle differences between members.

To promote a more enlarged and friendly intercourse among business men engaged in such trade or dealing with persons engaged therein.

To acquire by grant, gift, purchase, devise or bequest, to hold and to dispose of such property as the purposes of the corporation shall require, subject to such limitations as may be prescribed by law, including inventions, letters patent and processes, or rights thereunder, for the benefit of its members and not for pecuniary profit.

Officers

President, Charles Clifton

Vice-President, R. D. Chapin

Second Vice-Presidents: C. C. Hanch,
Gasoline Passenger Car Division; Wind-
sor T. White, Commercial Vehicle Divi-
sion.

Secretary, A. J. Brosseau.

Treasurer, H. H. Rice.

General Manager, Alfred Reeves.

Show Manager, S. A. Miles

Society of Automotive Engineers, Inc.

29 W. 39th St., New York, N. Y.

Object: To promote the arts and sciences connected with engineering and mechanical construction of automotive apparatus.

Officers

President, David Beecroft

First Vice-President, H. L. Horning

Second Vice-President, B. B. Bachman

Second Vice-President, E. A. Johnston

Second Vice-President, H. M. Crane

Second Vice-President, Jos. Van Blerck

Second Vice-President, T. C. Menges

Treasurer, C. B. Whittelsey

Secretary and General Manager, Coker F. Clarkson

Automotive Equipment Association

1813-1818 City Hall Square Bldg., Chicago, Ill.

William M. Webster, Commissioner

President, R. A. Stranahan, Ohio

Vice-President, H. M. Dine, Ohio

Chairman of the Board of Directors, J. Ernest Millen, Montreal, Canada

Index to Tables and Data Appears on Pages 1079 and 1080

The Motor and Accessory Manufacturers Association

33 West 42d St., New York, N. Y.

Objects: To promote in all lawful ways the interests of makers of motors, motor parts, and accessories.
To aid in the protection of its members.
To secure the advantages to be obtained by mutual co-operation.
To safeguard the interests of its members whenever possible and to diffuse information concerning trade credits, and other matters of interest to the members of the Association.
To co-operate with similar associations in other states.

Officers

President, E. H. Broadwell
First Vice-President, W. O. Rutherford
Second Vice-President, A. W. Copeland
Third Vice-President, H. L. Horning

Treasurer, L. M. Wainwright
Secretary and Asst. Treasurer, G. Brewer
Griffin
General Manager, M. L. Heminway

American Automobile Association

501 Fifth Ave., New York, N. Y.; Albee Bldg., Washington, D. C.

Objects: To unite in one body all the automobile associations and individual motorists of the country; to secure reasonable and just legislation.
To aid in proper enforcement of automobile laws and ordinances; to advocate and obtain local, State and Federal aid in the construction and maintenance of good roads.
To encourage touring, and to secure, prepare, and disseminate information relative thereto; and
To support sportsmanlike contests and other movements that will advance motoring interests.

Officers

President, David Jameson
Vice-Presidents:

Ralph W. Smith
P. J. Walker
H. J. Clark
Mrs. Robt. Lee Morrell

Clifford Ireland
George H. Kile
Dr. R. R. Elmore
Preston Belvin

Treasurer, H. A. Bonnell
Secretary, John N. Brooks

Chairmen of Boards:

A. G. Batchelder, Executive Board.
George C. Diehl, Good Roads Board.
Carl G. Fisher, Touring Board.
Richard Kennerdell, Contest Board.
Percy E. Towne, Legislative Board.

The Rubber Association of America, Inc.

52 Vanderbilt Avenue, New York, N. Y.

Objects: To promote in all lawful ways the commercial interests of its members and to secure the advantages to be obtained by mutual co-operation.
To acquire and disseminate information concerning trade conditions at home and abroad, credits and other matters of interest.
To stimulate social intercourse among those connected with the rubber industry and commerce.
In general to promote the welfare of the rubber industry.

Officers

President, Harry T. Dunn
First Vice-President, Frank A. Seiberling
General Manager and Secretary, A. L. Viles
Treasurer, Wm. C. Cox

Second Vice-President, Horace De Lisse

Motor Truck Association of America, Inc.

1819 Broadway, New York, N. Y.

Objects: To encourage the efficient use of auto trucks and protect users against unjust taxes or unreasonable restrictions of any character

To serve as a basis for a strong national organization of those interested in the commercial use of motor trucks and within our present membership district.

Officers

President, L. E. Campbell
 Vice-Presidents—Hermann Irion
 Charles M. Geiger

John W. Wierk
 Secretary, Joseph Husson
 Treasurer, Nat Mallouf

Directors

D. C. Fenner
 A. G. Freeland
 G. A. Green
 H. K. Jaburg
 E. Lascaris
 Wm. P. Held

H. V. Middleworth
 E. P. McDowell
 W. H. Moore
 J. B. Dolan
 J. K. Orr
 J. C. Williams

General Manager, T. D. Pratt
 Counsel, Coulter & Bond

Manufacturers Aircraft Association, Inc.

501 Fifth Ave., New York, N. Y.

President, Albert H. Flint
 Vice-President, J. K. Robinson, Jr.

Secretary, Frank H. Russell
 Treasurer, F. B. Rentschler

General Manager and Assistant Treasurer, Samuel S. Bradley

National Automobile Dealers Association

320 N. Grand Ave., St. Louis, Mo.

President, Jesse A. Smith, Milwaukee, Wis.

First Vice-President, William L. Hughson, San Francisco, Cal.

Second Vice-President, W. J. Brace, Kansas City, Mo.

Treasurer, F. W. A. Vesper, St. Louis, Mo.

General Manager, Harry G. Mook, St. Louis, Mo.

General Counsel, C. A. Vane, St. Louis, Mo.

Trailer Manufacturers Association of America

Grand Central Palace, New York City

Objects—To promote the trailer industry; encourage introduction and use of trailers and their accessories; further construction and maintenance of good roads; aid in securing enactment of uniform laws relating to use of trailers; and to gather and disseminate information regarding the trailer industry, the use of trailers, the construction of roads and the enactment of uniform laws.

Officers

President, J. H. Fertig, Newark, N. Y.
 1st Vice-President, H. C. Fruehauf, Detroit, Mich.
 2d Vice-President, Max Herrmann, Beloit, Wis.
 Secretary-Treasurer, Henry M. Wood, Cincinnati, Ohio
 General Manager, L. G. Meldram, New York City

Executive Committee

J. H. Fertig, Newark, N. Y.
 H. C. Fruehauf, Detroit, Mich.
 Max Herrmann, Beloit, Wis.
 Harry M. Wood, Cincinnati, Ohio
 W. E. Ferris, Cleveland, Ohio
 S. A. Griggs, Detroit, Mich.
 Ike S. Byrum, Troy, Ohio

Index to Tables and Data Appears on Pages 1079 and 1080

Rich Tool Company

Railway Exchange Bldg., Chicago, Ill.

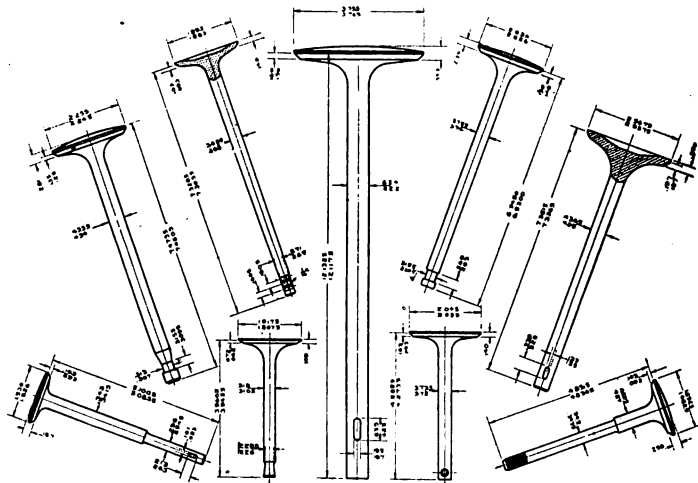
Kresge Building, Detroit, Mich.

The cuts below represent valves used in some of the best known present day Aero-plane, Motor-Boat and Racing Automobile Engines. They are all products of this Company and most of them have been produced in large quantities and have, therefore, been thoroughly tested in service.

Needless to say, they are all Tungsten Steel, but we also make one-piece forged valves of all other commonly used Alloy Steels in the manufacture of which we exercise the same care as is used in our Tungsten Valve materials.

One of the newer types of valves which we have been making in very large quantities for the past two years is our Hi-Chromium Valve, which has some very remarkable properties. It is for some purposes an excellent valve and we solicit inquiries from those who are troubled by a persistent burning away of the seats of the valves in their motors.

We also have a material called Cobalt-Crom that possesses the qualities of High-Chromium as relates to resistance to burning, together with a resistance to abrasion or wear and a strength when red hot more nearly comparable to that of High-Tungsten. This material offers excellent promise of good results in engines running for long periods under heavy load without attention, such as marine motors and tractor motors.



Our Engineering Department is at your service on all questions concerning suitability of material and design.

Please mention The Automobile Trade Directory

Your Castings

What do you know about them?
Do you know whether they contain Cicoa Charcoal Iron?

If they do contain this iron, does your sales force know it and do they use this point in their "sales talk?"

DO you have trouble in your machine shop because of lack of uniformity—soft or hard spots—blow holes—shrinkage, etc.?

If you are experiencing any of these difficulties—if your losses in the machine shop because of bad castings are heavy—if your castings do not stand up under severe stresses and strains you should use one of the



The Ton Cost of Pig Iron depends on the final tally sheet—the Score of Perfect Castings in a finished, machined state determines the cost.

BIG FOUR BRANDS OF Cicoa Charcoal Iron

"Pine Lake"
"Hinkle"

"Michigan"
"Champion"



Charcoal Iron Company of America
Detroit Michigan

DUFF GENUINE BARRETT JACKS

A Moderate-Priced Automobile Jack

This jack meets, at a very moderate price, all requirements as to lifting capacity and different axle heights of the great majority of passenger cars and light commercial motor vehicles. The footlift is of the quickly adjustable, sliding type, instantly set at any height on the rack to fit under car axle, and reserving the entire "raise" of the lifting rack for actual lifting of the car above the ground. Jack is guaranteed to lift 2000 lbs. on the head and 1000 lbs. on the footlift. Furnished with 18-in. steel handle.



Jack No.	Capacity	Height Inches	Raise Inches	Foot Lift Adjustment		Weight with Lever	List Price
				Lowest	Highest		
08	1 ton	11 $\frac{1}{4}$	6 $\frac{1}{2}$	4 in.	10 $\frac{1}{2}$ in.	9 lbs.	\$5.50



"The Aristocrat of Auto Jacks"

An easily operated jack for lifting the heaviest passenger cars. Operating handle is twice as long as the ordinary jack handle. The long handle easily clears all obstructions at either the front or rear of the car, and may be used to place the jack in position or remove it. When not in use, the handle uncouples to half its length, easily fitting into the smallest tool box. By means of an adjustable foot lift, the jack can be made instantly to fit under the lower axle of any car. The range of adjustment is wide enough to handle any car in any position.

Jack No.	Capacity in tons	Height Inches	Raise Inches	Weight with Lever	Foot Lift Adjustment		List Price
					Lowest	Highest	
411	1 $\frac{1}{2}$	11	7	20 lbs.	4 in.	10 in.	\$15.00

Sturdy Motor Truck Jacks

The leverage in these jacks is so compounded by gears that the load is lifted with only one-third the effort required with a direct leverage jack. Furnished as standard equipment by many of the leading truck manufacturers. Recommended for constant service in garages where a heavily built jack is needed to stand the heavy wear that a garage jack is subjected to. Each jack is tested before shipment.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Weight with Lever	Code Word
100	3	10 $\frac{1}{4}$	5 $\frac{1}{4}$	16 lbs.	Comet
200	5	13	6 $\frac{1}{4}$	28 lbs.	Autojax
207	5	12 $\frac{3}{4}$	5 $\frac{1}{4}$	22 lbs.	Meteor
205	10	16	5 $\frac{1}{4}$	43 lbs.	Motruz



THE DUFF MANUFACTURING CO.

General Offices and Works—PITTSBURGH

50 Church St.
NEW YORK, N. Y.

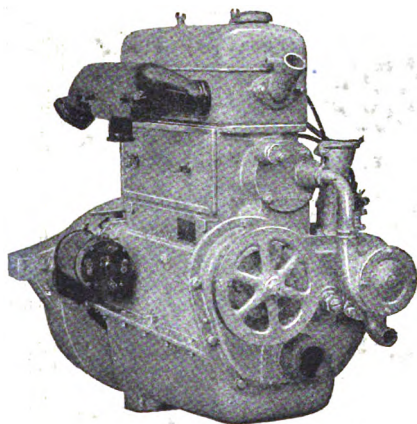
Peoples Gas Bldg.
CHICAGO, ILL.
Monadnock Bldg., SAN FRANCISCO, CAL.

Candler Bldg.
ATLANTA, GA.

Railway Exch. Bldg.
ST. LOUIS, MO.

Weidely

Bulldog Motors



Model MAT
(Also other models)

Specifications

Bore, 4 in. _____
Stroke, 5 1/4 in. _____
Piston Displacement, 276 cu. in. _____
Crankshaft Main Bearing (Rear), 2 1/4 x 4 in.
Crankshaft Main Bearing (Front and Center), 2 1/4 x 2 1/4 in.
Connecting Rod, 22 1/4 in.
Wrist Pin Bearing, 1 in.
Diameter of Valves in Clear, 1 13/16 in.
Total Weight of Motor, 670 lbs.
Horse Power (S. A. E. Rating), 25.6 _____ 22.5
Suspension, 3 point.
Bell Housing, No. 3 S. A. E.
Spread of Arms, 24 1/4 in.
Electrical Equipment, Generator with Distributor or Magneto
and Starting Motor.
Oil Pan, Cast Iron or Aluminum.
Bell Housing, Cast Iron or Aluminum.

**Motors for
Trucks, Tractors, Passenger Cars**

Write for Full Specifications

Weidely Motor Features

Overhead Valves.
Force Feed Lubrication.
Positive water circulation.
Materials used especially suitable
for each part.
Husky Crankshaft.
Ample Bearings.
More Horse Power per cubic inch.
In other words—a Bulldog.
Nearly 30,000 in service.

WEIDELY MOTORS CO.

Main Office and Factory: Indianapolis,
Ind., U. S. A.
San Francisco: Motor Products Co.
604 Mission St.

GARCO

ASBESTOS AUTO SPECIALTIES



Garco Asbestos Brake Lining

Solidly woven—permanently compact. Selected asbestos fibre reinforced by sturdy wires.

Send for our new Garco Brake Lining Data Book. Brake lining and clutch facing dimensions for every motor vehicle. A valuable book.



Garco Transmission Lining For Ford Cars

Contains no wire. 3 pieces to box; each piece $23\frac{1}{2}$ " $\times$ $11\frac{1}{4}$ " $\times$ $\frac{1}{4}$ ". Sufficient rivets included. Also furnished in 100' rolls.



Garco Gasket Roll

A reliable waterproof gasket packing. Wire mesh with asbestos spun around each wire. 10 " $\times$ 40 "; $\frac{1}{8}$ " or $\frac{1}{4}$ " thick.



Pyroid Compressed Asbestos Sheet Packing

Asbestos fibre, resisting heat, oil and acids. Red, gray or graphited, in sheet 50 " square, $\frac{1}{8}$ ", $\frac{1}{4}$ " or $\frac{3}{8}$ " thick.



Garco Asbestos Wick Packing

Asbestos fibre, twisted into round wick, $\frac{1}{4}$ " in diameter. A packing of many uses.

Write direct to our nearest office and shipment will be made through your regular dealer.

GENERAL ASBESTOS & RUBBER COMPANY

Main Office and Factories, Charleston, S. C.

BRANCHES AND COMPLETE STOCKS

52 Warren Street, New York

511 Water Street, Pittsburgh

14 North Franklin Street, Chicago